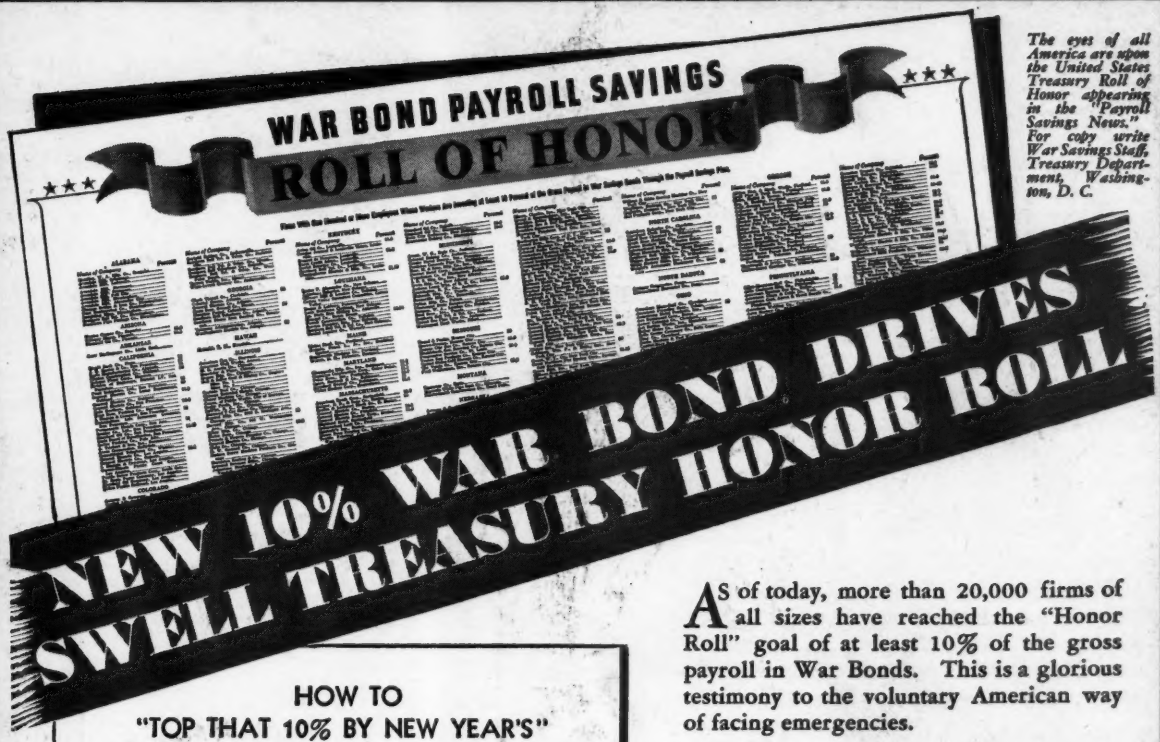
CALIFORNIA
OIL WORLD
and Petroleum Industry



The eyes of all America are upon the United States Treasury Roll of Honor appearing in the "Payroll Savings News." For copy write War Savings Staff, Treasury Department, Washington, D. C.

HOW TO "TOP THAT 10% BY NEW YEAR'S"

Out of the 13 labor-management conferences sponsored by the National Committee for Payroll Savings and conducted by the Treasury Department throughout the Nation has come this formula for reaching the 10% of gross payroll War Bond objective:

1. ***Decide to get 10%.***
   It has been the Treasury experience wherever management and labor have gotten together and decided the job could be done, the job was done.
2. ***Get a committee of labor and management to work out details for solicitation.***
   a. They, in turn, will appoint captain-leaders or chairmen who will be responsible for actual solicitation of no more than 10 workers.
   b. A card should be prepared for each and every worker with his name on it.
   c. An estimate should be made of the possible amount each worker can set aside so that an "over-all" of 10% is achieved. Some may not be able to set aside 10%, others can save more.
3. ***Set aside a date to start the drive.***
4. ***There should be little or no time between the announcement of the drive and the drive itself.***
   The drive should last not over 1 week.
5. The opening of the drive may be through a talk, a rally, or just a plain announcement in each department.
6. Schedule competition between departments; show progress charts daily.
7. Set as a goal the Treasury flag with a "T."

As of today, more than 20,000 firms of all sizes have reached the "Honor Roll" goal of at least 10% of the gross payroll in War Bonds. This is a glorious testimony to the voluntary American way of facing emergencies.

But there is still more to be done. By January 1st, 1943, the Treasury hopes to raise participation from the present total of around 20,000,000 employees investing an average of 8% of earnings to over 30,000,000 investing an average of at least 10% of earnings in War Bonds.

You are urged to set your own sights accordingly and to do all in your power to start the new year on the Roll of Honor, to give War Bonds for bonuses, and to purchase up to the limit, both personally and as a company, of Series F and G Bonds. (Remember that the new limitation of purchases of F and G Bonds in any one calendar year has been increased from $50,000 to $100,000.)

TIME IS SHORT. Our country is counting on you to—

"TOP THAT 10% BY NEW YEAR'S"

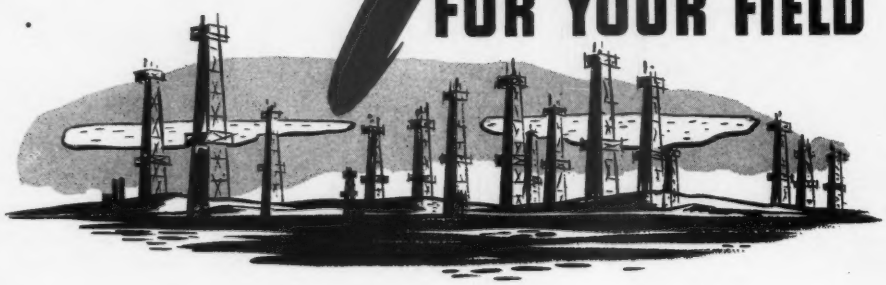
EVERYBODY EVERY PAYDAY AT LEAST 10%

Save with War Savings Bonds

This space is a Contribution to America's All-Out War Effort by CALIFORNIA OIL WORLD

Vol. 36
No. 1
Whole
No. 1624

GET THE CORRECT *Bit Fit* FOR YOUR FIELD



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Guesswork is out when Crum-Brainard engineers tackle your bit problems. Send us a description of the formations in your field and your suggestions as to rock bit characteristics needed to drill them efficiently. Our engineers will be glad to incorporate these suggestions in perfecting a bit for **your specific needs,** or in recommending one or more standard Crum-Brainard types for your conditions.

You get **more hole, straighter** hole with Crum-Brainard's correct BIT FIT!

*In numerous competitive runs all over the world Crum-Brainard Bits, properly selected for local conditions, have out-performed all other types!

Type "OSS" for soft, sticky formations
Type "OS" for shale and medium sand rock
Type "OW" for medium hard shale
Type "O" for ordinary surface formations
Type "CO" for abrasive limes and shales
Type "C" for hard and abrasive formations
Type "CF" for extremely hard formations

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OIL WORLD
and Petroleum Industry

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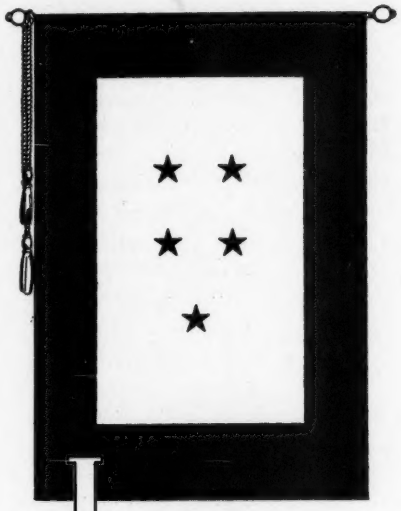

In the service of our country

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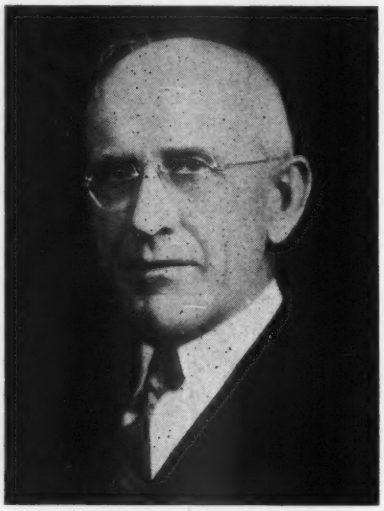
Administrative Highlights •

Calif. Oil and Gas Assn. Elects Directors for 1943

Ralph B. Lloyd, president of the Lloyd Corporation, Ltd., was re-elected president of the California Oil and Gas Association for a second term at the December meeting of the Association's Board of Directors held on Dec. 29. A. C. Mattei, president of the Honolulu Oil Corporation, and Reese H. Taylor, president of the Union Oil Company of California, were elected vice-presidents. C. A. Johnson, president of the Holly Development Company, was elected treasurer. F. E. Foster continues as managing director, and D. S. Kilgour continues as assistant manager.

Directors elected for 1943 include: Leigh M. Battson, c/o Robert S. Lytle, Operator; S. Belither, chairman, Shell Oil Company, Inc.; James B. Black, president, Pacific Gas and Electric Co.; H. D. Collier, president, Standard Oil Company of California; R. E. Collom, vice-president, Continental Oil Company; J. A. Crawford, president, Youngstown Steel Products Co.; S. J. Dickey, president, General Petroleum Corporation of California; E. S. Dulin, president, Byron Jackson Company; LeRoy M. Edwards, vice-president, special counsel, Southern California Gas Company; E. B. Gilmore, president, Gilmore Oil Company; Dana Hogan, president, Hogan Petroleum Company; R. P. Huggins, general manager, Western Gulf Oil Company; Wm. F. Humphrey, president, Tide Water Associated Oil Company; C. S. Jones, president, Richfield Oil Corporation; W. M. Keck, president, Superior Oil Company; Wm. Reinhardt, vice-president, Union Pacific Railroad; F. C. Ripley, manager, Chanslor-Canfield Midway Oil Company; L. P. St. Clair, president, Independent Oil Producers' Agency; J. B. Sutherland, division manager, Ohio Oil Company; Lawrence Vander Leck, vice-president, Fullerton



Ralph B. Lloyd

Oil Company; C. P. Watson, vice-president, Seaboard Oil Co. of Delaware; Torrey H. Webb, vice-president, The Texas Company; A. L. Weil; Lee K. Whittier, treasurer, Belridge Oil Company; W. C. Whaley, vice-president, general manager, Barnsdall Oil Company.

Industry Study Group To Meet

More efficient operating practices and adequate substitutes for critical materials will be sought by oil producers through a series of studies to be made by the Committee on Production of the Petroleum Industry War Council, Petroleum Administrator for War Harold L. Ickes announced early in January.

A plan to conduct the studies already has been jointly approved by the PIWC's Production Committee and the Petroleum Administration for War. Under immediate consideration is an inquiry into the possibility of conserving steel in pumping units.

Deputy Administrator Ralph K. Davies said that all subjects for study will be determined by the Committee on Production, which will report its findings and recommendations to the PAW.

Studies will be conducted as follows:

The Committee on Production will select one or more subjects that deal either with substitutions or operating practices. Subjects may be suggested by members of the Committee, the Petroleum Administration, District Production Committees, or individual operators. Decision as to what studies will be made, however, remains with the Committee on Production.

When a subject is selected, the Production Committee will appoint a five-man study group consisting of four industry representatives who are specialists in the subject and one representative from PAW. The latter will also act as liaison between the study group and PAW.

The study group will report final results to the Production Committee of the PIWC, which then will refer the results and the Committee's recommendations to the Petroleum Administration.

Commenting on the importance of these studies, Mr. Davies said: "Undoubtedly, these studies will prove valuable to the industry and to the war program by suggesting materials that can be used for the duration as substitutes for more critical goods. Too, it is not unlikely that the studies will develop more efficient operating practices which will be continued even after the war."

The Oil Industry in 1942

By William R. Boyd, Jr.

President, American Petroleum Institute
Chairman, Petroleum Industry War Council

Motorists are getting only part of the gasoline they would normally use, home-owners with oil-burners are on short rations, apartment houses and factories have had to convert from oil to coal—but "not one ship or plane or tank has failed to move on schedule for lack of petroleum products."

That is the job we set out to do, and so far the industry and the Petroleum Administrator, working together in what has become the most unique and what we think is the most effective industry-government team in Washington, have delivered the goods for the armed forces, where and when, and in the quantities, needed. General Pyron of the War Department is authority for the statement quoted.

So far as its normal operations are concerned, the industry set few new records in 1942 to accomplish this, but it is a safe bet that no oil man with experience in the wildest boom times of the industry's pioneering ever went through anything like the nerve-wracking days of 1942, with a new crisis born every morning.

Transportation, and men, materials, and money, were the oil industry's basic problems last year, and there is no question but that they will become more critical long before they are entirely solved.

The East Coast has become the front porch of Africa and Europe, and large quantities of the petroleum which we have brought with so much sweat from the Southwest to the East have rested there only momentarily before taking off in Army and Navy tankships for the other side of the Atlantic. That is as it should be. If their hard-pressed tankships do not have time to go all the way to the Gulf Coast for supplies, they can have every drop they need from the East Coast.

The result, in decreased civilian rations, has been headline news all last month. The oil industry and the Petroleum Administrator have not yet given up hope, however that further miracles will be brought to pass in tankcar deliveries, to better the splendid job that already is being done, so that those who must have gasoline will get it, and those who cannot convert and must heat with oil will have enough to keep warm.

Materials and manpower shortages have been plaguing every operating branch of the industry and steadily are growing more acute. The oil industry recognizes fully that it is entitled to no more materials than are absolutely essential to perform the job the nation expects of it, but in some instances we have felt that there has been a failure to understand these minimum needs.

Daily we are losing skilled drillers, production men, and refinery experts into whose skill has gone years of training. The manpower problem is one of the most serious now confronting the industry, and some solution must be found without delay.

Specifically-earmarked price increases have offset some of our increased costs because of transportation changes, but the refining branch of the industry particularly is incurring unique war costs that must be recognized soon by the government. The burden of manufacturing more lower-priced and less higher-priced products in a frozen economy is attacking the solvency of many of the smaller units of the industry, and actually is threatening their ability to produce.

New oil reserves are needed at once, and studies of the Petroleum Industry War Council and others are being made now to determine what incentives ought to be granted to encourage new discoveries of oil.

Crude oil production, estimated at about 1,385,000,000 barrels for the year, was slightly under the all-time record of 1,404,000,000 barrels in 1941, and the approximately 20,000 well completions last year were only 60 per cent of the 1941 total. Stocks of crude oil at the end of the year reached the lowest point in 20 years.

For 1943, if we can produce it and transport the products, there should be a substantial increase in crude oil production. To meet even the rationed demand would require a rise of more than 400,000 barrels a day by the end of the year, compared with the same period of 1942.

Total production of motor fuel, kerosene, and lubricants dropped from the 1941 records, but the output of light and heavy fuel oils reached new all-time highs. Inventories of all major products except lubricants declined at the end of the year to levels substantially below the 1941 year-end stocks.

Indicative of the low level of petroleum prices is the fact that the Bureau of Labor Statistics' index of wholesale prices for petroleum products rose only from 52.2 in 1939 to 59.8 last year, while for all commodities the index jumped from 77.1 to 98.8.

The following tables give American Petroleum Institute estimates of some 1942 petroleum statistics:

CRUDE OIL PRODUCTION

(In thousands of barrels)

State	1940	1941	1942
Arkansas	25,775	26,327	26,664
California	223,881	230,263	247,775
Colorado	1,626	1,875	2,267
Illinois	147,647	134,138	106,454
Indiana	4,978	6,634	6,758
Kansas	66,139	83,261	97,647
Kentucky	5,188	4,762	4,200
Louisiana	103,584	115,908	116,878
Michigan	19,753	16,361	21,753
Mississippi	4,400	15,314	28,846
Montana	6,728	7,526	8,077
Nebraska	*	1,636	1,286
New Mexico	39,129	39,369	31,931
New York	4,999	5,185	5,410
Ohio	3,159	3,340	3,575
Oklahoma	156,164	154,759	140,106
Pennsylvania	17,353	16,750	17,940
Texas	493,209	507,584	481,581
West Virginia	3,444	3,433	3,575
Wyoming	25,711	29,694	31,794
Other States**	347	63	65
U. S. Total	1,353,214	1,404,182	1,384,582

*Included in Other States in 1940.
**Missouri, Tennessee, and Utah in 1941 and 1942; these states and Nebraska in 1940.

WELLS COMPLETED IN THE U. S.

Year	Oil Wells	Gas Wells	Dry Holes	Water Drive Wells	Total
1938	18,598	2,066	6,141	688	27,493
1939	17,625	2,198	6,474	1,420	27,717
1940	19,125	2,352	6,617	1,947	30,041
1941	19,552	3,007	7,128	2,366	32,053
1942	10,450	2,250	5,500	1,800	20,000

(Continued on Page 8)

REHABILITATION of Old

By N. L. Dorn

Vice-Pres. & Chief Engineer

Lane-Wells Co.

There are thousands of wells in the United States where production is cased off. In some instances the casing off was done intentionally with the object of protecting the zone and making it available for future use; in others the productive zone was not known to exist until later drilling of surrounding wells disclosed its presence. In probably the majority of these wells the time has come, or will later come, when the cased-off production should be utilized either, to continue the well as a producer by plugging back, or to add to the production from a lower zone which has decreased in volume and/or pressure to such an extent as to make production from the cased-off zone possible and profitable. The procedure then is to make sure of the exact location of the zone behind the pipe and to gun perforate effectively.

Before the development of Radioactivity Logging many such workover jobs had to be performed with hit-or-miss methods. Some of the wells were drilled with cable tools and some with rotary; some were cored, some were electrically logged and some were drilled with practically no records. Dipping structures, faults and crooked holes added to the difficulty in locating the productive sands, and errors as great as several hundred feet have occurred. The work of opening up cased-off zones sometimes required a long series of gun-perforating, testing and squeeze-off operations before production was found. In some cases production never was picked up, although it was probably present.

By the use of Radioactivity Logging the accurate location of cased-off zones is secured so that the limits

d Wells Aids War Effort

for gun perforating can be determined and the shooting can be done intelligently. Radioactivity Logs provide data on formations lying behind one or more strings of pipe and records have been taken through as many as five strings. In many of the old wells there are no accurate casing records and since the radioactivity curve shows a decided displacement when passing out of each shoe the depths of settings of the various strings in the well are disclosed. The knowledge of the actual number of strings of pipe which have to be penetrated is in itself an aid in gun perforating.

In fields where electrical logs have been taken while drilling later wells the general stratigraphical data supplied by the electrical logs will facilitate interpretation of the Radioactivity Log of an old well. When an electrical log has been taken in the well itself, a comparison of this with a Radioactivity Log will assist in making a close determination of the zone to be gun perforated. In many cases, however, old records are even misleading when available, and dependence has to be placed on the Radioactivity Log alone. In any instances where the data are conflicting, the operations will have to be conducted on the information furnished by the Radioactivity Log since the old records are too unreliable. The Radioactivity Log has frequently prevented a "wild goose chase" for oil that actually lay at depths quite distant from those indicated by inaccurate, earlier data.

Increasing Heavy Oil Production

Rehabilitation of oil wells without the use of new steel is particularly important in the heavy oil fields of California at the present time. Much of this work is being done to secure additional production of heavy oil from sands that have been cased off. In a few instances deeper, lighter-gravity production is not exhausted, but due to the demand for heavy oil a higher zone carrying such oil that was cased off is being put on production. In recent months Radioactivity Logging has been used extensively to obtain data on the formations lying behind casing and from the information so secured the perforating depths have been determined.

The shallower heavy oil frequently lies behind multiple strings of casing, and these strings are often cemented between strings as well as between the outer string and the wall of the hole. An example of this is illustrated by Fig. 1, which gives the subsurface conditions of a well that was producing from a lower zone but in which a sand at a high level was found in adjacent wells drilled subsequent to the completion of this well. The upper zone was believed to have favorable prospects for production at this location, so a Radioactivity Log

(Continued on Page 25)

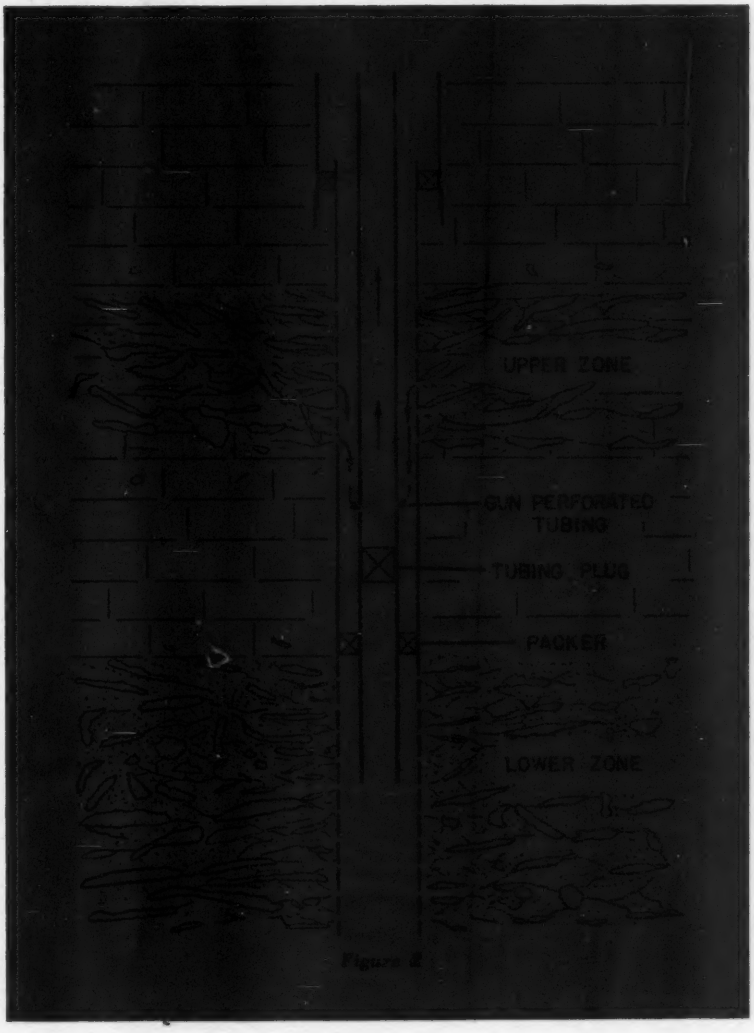
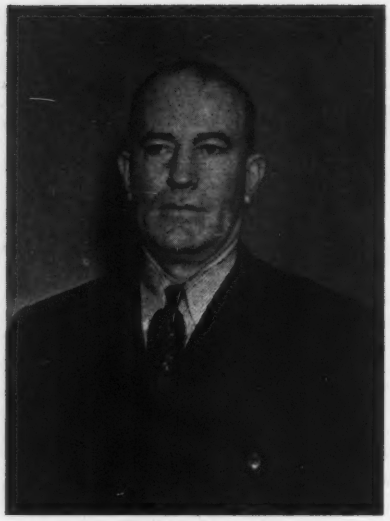


Figure 2



E. E. Pyles

Pyles Chosen Oil Coordinator of Conservative Committee

Ernest E. Pyles was chosen Petroleum Coordinator of the Conservation Committee of California Oil Producers at the last meeting of that body. William Wardner, Jr. was retained as manager. It is reported that Mr. Pyles' new duty will be to coordinate the activities of the conservation committee with those of other committees and government agencies dealing with the production of petroleum.

Oil Industry Can Sell Material to Suppliers

The sale of inventory stocks of materials by an oil operator to an oil industry suppplier for direct resale to another operator is now permitted by WPB Preference Rating Order P-38-c, as amended upon recommendation of the Petroleum Administration for War. The object of the order is to permit supply houses to negotiate the sale and delivery of materials between operators. Acting in the capacity of brokers the suppliers can facilitate the movement of these materials. Previously the order only permitted the sale of inventory stocks by one oil operator directly to another oil operator.

Oil Hearings Start January 4

Senator Maloney, of Connecticut, chairman of the Oil Investigating Committee announces that public hearings will be started on January 4, and that he has called Messrs. Ickes, Henderson, Eastman, Admiral Land and Jeffers as witnesses. Meanwhile, he is asking for information from the oil industry. He said the committee plans a complete study of the situation with the purpose of keeping the nation informed of just what it must expect in the future.

Davies Makes Appeal for More Oil

Ralph K. Davies, Deputy Petroleum Administrator, who spoke before 350 California oil men at the San Joaquin Valley Oil Producers' Association annual dinner meeting on December 29, appealed to the California oil industry for increased production to meet pressing war needs in the Pacific. Plans for increasing production, Davies said, would be left to the industry itself. He warned, however, that there will be little forthcoming from Washington in priorities for new equipment to refurnish wells for drilling. "New production must come from present wells and the oil men must figure out how it can be done," he said. He disclosed that California fields are the total source of fuel for armed forces in the Pacific.

Davies declared the oil administration's office will recommend in the near future a boost in the price of heavy crude oil. California fields can meet the needs of war and with this incentive the producers will be expected to go ahead with increased production plans, he said.

Certain Aviation Gasoline Exempt From Price Control

The West's petroleum industry was advised by the Office of Price Administration on Dec. 29th that aviation gasoline of 87 octane and higher has been exempt from price control.

This gasoline is now allocated by government authority and the exemption was made at the request of the Deputy Petroleum Coordinator and approved by the Defense Supplies Corporation. Earlier OPA action had freed gasoline of 91 octane rating and higher from price control to relieve the government and industry of unnecessary regulations and now extends that relief to lower octane ratings for the same reason.

The new exemption is contained in amendment No. 47 to supplementary regulation No. 1 under the general maximum price regulation, and amendment 52 to revised price schedule No. 88—petroleum and petroleum products. Both amendments are effective January 4, 1943.

Kohler Appointed Davies Assistant

The appointment of Eric L. Kohler as Executive Officer of the Petroleum Administration for War was announced recently by Deputy Administrator Ralph K. Davies.

As Executive Officer, Mr. Kohler will serve as executive assistant to the Deputy Administrator in the handling of organizational and administrative problems with PAW.

Mr. Kohler comes to PAW from the War Production Board's office of operations, where he was engaged in organizational and administrative work. From 1938 to 1941 he was comptroller of the Tennessee Valley Authority at Knoxville, Tennessee, having entered Government service after twenty years' experience as a consulting accountant in Chicago. He has a wide reputation in the accounting field, being the author of several textbooks and editor of The Accounting Review, official publication of the American Accounting Association. At one time he was professor of accounting at Northwestern University.

The new Executive Officer is a native of Owosso, Michigan.

Preference Rating Order P-98b

TITLE 32—NATIONAL DEFENSE
Chapter IX—War Production Board
Subchapter B—Director General for Operations
Part 1041
Production, Transportation, Refining and Marketing of Petroleum

Preference Rating Order P-98b, as Amended December 31, 1942.

Section 1041.2. (Preference Rating Order P-98b) is hereby amended to read as follows:

Section 1041.2. (Preference Rating Order P-98b) is hereby amended December 31, 1942). For the purpose of facilitating the acquisition of material for the production, transportation, refining and marketing of petroleum, preference ratings are hereby assigned to deliveries of necessary material upon the terms hereinafter set forth:

(a) **Definitions.**

(1) "Person" means any individual partnership, association, business trust, corporation, governmental corporation or agency, or any organized group of persons, whether incorporated or not.

(2) "Operator" means:
- (i) Any person located in the United States, its territories or possessions, engaged in the petroleum industry; or
- (ii) Any person located in the Dominion of Canada engaged in the petroleum industry to whom and in whose name a copy of this order or of Preference Rating Order No. P-98b, Extended and Amended, is or has been specifically issued and to whom a serial number has been assigned.

(3) "Supplier" means any person with whom a contract or purchase order has been placed for delivery of material to the operator or to another supplier.

(4) "Petroleum" means petroleum, petroleum products and associated hydrocarbons, including but not limited to natural gas.

(5) "Material" means any commodity, equipment, accessory, part, assembly, or product of any kind.

(6) "Petroleum Industry" means any operation directly incident to:
- (i) the discovery, development or depletion of petroleum pools (production);
- (ii) the extraction or recovery of natural gasoline and associated hydrocarbons (natural gasoline production);
- (iii) the transportation, movement, loading or unloading of petroleum other than natural gas (transportation);
- (iv) the processing refining or compounding of finished or unfinished petroleum products (refining);
- (v) the distribution or dispensing of petroleum products (other than natural gas) and the storing of petroleum products incident thereto (marketing).

(7) "Research Laboratory Material" means material used exclusively for the purpose of carrying out by means of an existing research laboratory investigations into more efficient or effective methods of conducting petroleum industry operations, except that such material shall not include material for use in the construction of laboratory buildings or other structures.

(b) **Scope of Order.**

(1) No operator may apply any preference rating assigned by this order to obtain delivery of material
- (i) unless such material is research laboratory material, or is to be used in effecting an alteration which when completed has involved the use of additional material having a total value of less than $500.00, or is to be used for maintenance or repair purposes or as operating supplies; or
- (ii) unless such rating is applied to obtain delivery of material to be used in any operation directly incident to the discovery, development or depletion of petroleum pools.

(c) **Assignment of Preference Ratings.**

Subject to the terms of this order, a preference rating of A-2, A-1-a or AA-2X is hereby assigned to deliveries of material to an operator for use in the petroleum industry.

(d) **Restrictions on the Application of Preference Ratings by an Operator.**

(1) No operator may apply any preference rating assigned by this order to obtain delivery of material unless the material cannot otherwise be obtained on the date when such material is required, and no operator may apply a preference rating assigned by this order in any case where a lower preference rating assigned by this order will enable such operator to secure the material on the date when such material is required.

(2) No operator may apply a rating assigned by this order to obtain material the use of which may be eliminated by substitution of less scarce material or by change of design without serious loss of efficiency.

(3) No operator may apply a rating assigned by this order to obtain material in excess of a 90-day supply thereof; **Provided,** that the Director General for Operations may determine and direct that any operator or class of operators is exempt, in whole or in part, from the restrictions contained in this paragraph.

(4) No operator as defined in subparagraph (a) (2) (i) may apply a rating assigned by this order to obtain material for any use which is restricted, prohibited or in any way limited by any order or regulation issued by the War Production Board, other than material to be used in conformity with the provisions of such order or regulation.

(5) No operator as defined in subparagraph (a) (2) (ii) may apply a rating assigned by this order to obtain material for any use which is restricted, prohibited, or in any way limited by any applicable order or equivalent authority issued by the Government of the Dominion of Canada, other than material to be used in conformity with the provisions of such order or equivalent authority.

(e) **Method of Application of Preference Ratings.**

In order to apply a preference rating assigned by this order:

(1) The operator must endorse on, or attach to, each contract or purchase order placed by him which includes such a preference rating, a certification in the following form, signed manually or as provided in Priorities Regulation No. 7 (944.27) by an official duly authorized for such purpose:

"The undersigned purchaser hereby represents to the seller and to the War Production Board that he is entitled to apply or extend the preference ratings indicated opposite the item shown on this purchase order and that such application or extension is in accordance with Priorities Regulation No. 3, as amended, with the terms of which the undersigned is familiar.

.....
(Name of Purchaser)
.....
(Address)
.....
(Signature and title of duly authorized official)
.....;"
(Date)

and

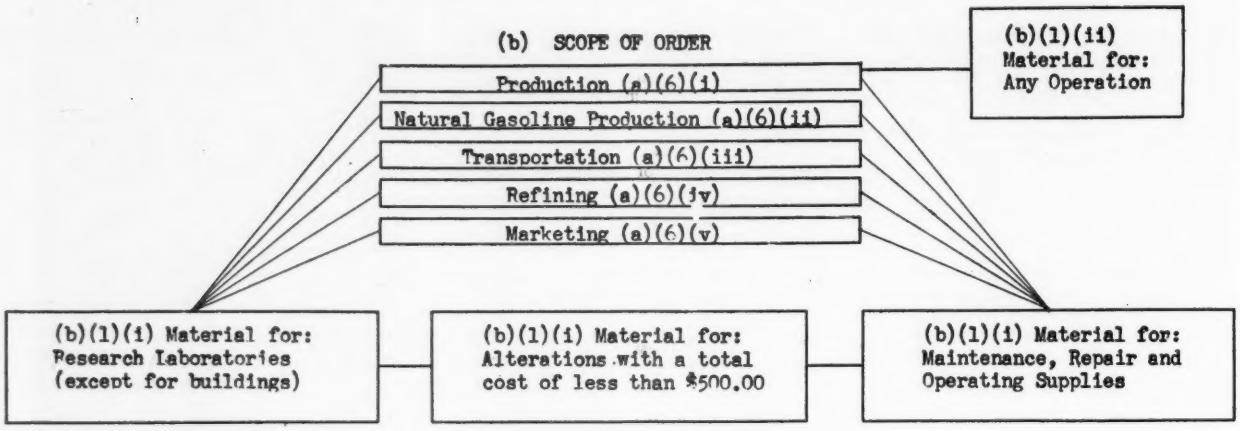
(2) the operator shall obtain the approval of the Director General for Operations before the rating is applied in any case:
- (i) where the delivery of an item which has a cost to the operator of $500.00 or more requires the application of an A-1-a preference rating; or
- (ii) where, except as provided in subparagraph (e) (3) (iii), the delivery of an item requires the application of an AA-2X preference rating.

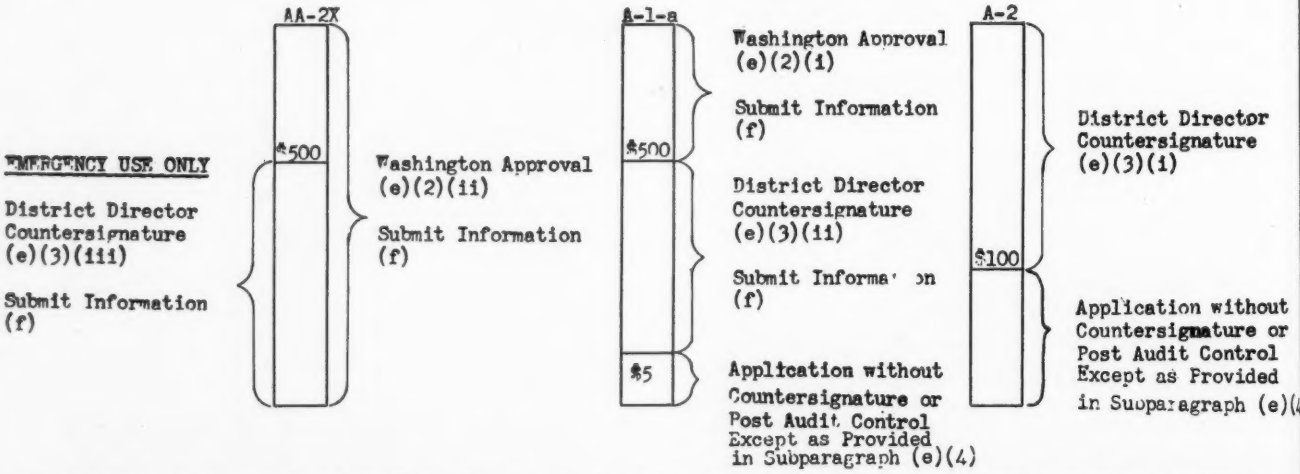
In order to obtain such approval, the operator shall communicate to the Petroleum Administration for War, Washington, D. C., Ref.: P-98b, the information set forth in paragraph (f).

(3) The operator shall obtain a countersignature on the purchase order or contract before the rating is applied in any case:
- (i) where the delivery of an item which has a cost to the operator of $100.00 or more requires the application of an A-2 preference rating; or
- (ii) where the delivery of an item which has a cost to the operator of less than $500.00 but more than $5.00 requires the application of an A-1-a preference rating; or
- (iii) where there has been actual breakdown or a suspension of operations and where the delivery of an item which has a cost to the operator of less than $500.00 requires the application of an AA-2X preference rating.

In order to obtain such a countersignature the operator as defined in subparagraph (a) (2) (i) shall submit the purchase order or contract to the District Director of Material of a District Office of the Petroleum Admin-

GRAPHIC REPRESENTATION OF PREFERENCE RATING ORDER P-98b, AS AMENDED


(b) SCOPE OF ORDER
Production (a)(6)(i)
Natural Gasoline Production (a)(6)(ii)
Transportation (a)(6)(iii)
Refining (a)(6)(iv)
Marketing (a)(6)(v)
(b)(1)(ii) Material for: Any Operation
(b)(1)(i) Material for: Research Laboratories (except for buildings)
(b)(1)(i) Material for: Alterations with a total cost of less than $500.00
(b)(1)(i) Material for: Maintenance, Repair and Operating Supplies



The above graphic representation of Preference Rating Order P-98b, as Amended, is intended to clarify the provisions of paragraph (b) "Scope of Order" and of paragraph (e) "Method of Application of Preference Ratings". Each item portrayed in the graph is cross-referenced to the applicable subparagraph in the text of the order. The graph purports merely to supplement the text of the order for the purpose of clarity and convenient reference. By no means does it obviate the necessity for a detailed understanding of the provisions of the order. Attention is specifically directed to certain provisions of the order not indicated in the graph. In the event that the material specified on Exhibit "A" is to be used in service station operations, subparagraph (e) (4) requires a countersignature on the purchase order or contract before the rating is applied in any case where an A-2 preference rating is required for an item costing less than $100.00 or an A-1-a preference rating for an item costing $5.00 or less. In addition, the restrictions of paragraph (d) apply to the use of any preference rating assigned by the order, as well as the provisions of subparagraph (e) (1) and of paragraphs (g), (h), (i), (j) and (k).

istration for War, and the operator as defined in subparagraph (a) (2) (ii) shall submit the purchase order or contract to the Oil Controller, Dominion of Canada. In order to obtain a countersignature pursuant to subparagraphs (e) (3) (ii) and (e) (3) (iii) such operator shall communicate to the District Director of Material or to the Oil Controller the information set forth in paragraph (f).

(4) In the event that the material specified in Exhibit "A" is to be used in service station operations, the operator shall obtain the countersignature of the District Director of Materials or of the Oil Controller on the purchase order or contract before the rating is applied in any case:
   (i) where the delivery of an item, which has a cost to the operator of less than $100.00 requires the application of an A-2 preference rating; or
   (ii) where the delivery of an item, which has a cost to the operator of $5.00 or less, requires the application of an A-1-a preference rating.

Provided, that in applying a preference rating assigned by this order, no operator shall alter the customary designation of any item or subdivide an ordinary purchase of any item for the purpose of making it appear that the item costs less than $500.00, or that the item costs less than $100.00, or that the item costs $5.00 or less.

(f) **Information.**

Wherever required by this order the following information shall be submitted by an operator:

(1) Date of actual breakdown or suspension of operations and exact explanation as to what extent operations are affected (if applicable);

(2) The equipment to be repaired and its function in maintaining continuous operation (if applicable);

(3) Price, quantity, approximate weight and detailed description of necessary material; if such material in finished form weighs twenty-five pounds or less, the weight need not be shown but a statement must be made that the weight is not over twenty-five pounds (detailed description of material must be given even though it is set forth in purchase order or contract);

(4) A general description of the metals contained in the material applied for, and the full justification as to necessity for any material containing met-

als adjudged critical by the War Production Board, including copper, nickel, chromium, zinc, tin, aluminium and molybdenum;

(5) The supply of the necessary material which the operator has on hand;

(6) The name and address of the supplier (or suppliers) and the earliest delivery dates assured by him for the delivery of the minimum necessary quantity of material on (a) the preference rating for which approval is requested, and (b) the next lower preference rating assigned by this order;

(7) The purchase order or contract shall not be sent to the Petroleum Administration for War, Washington, D. C., but in every instance the number and date of the purchase order or contract must be transmitted to the Petroleum Administration for War, Washington, D. C.; and

(8) Any other data or information which will help to determine the importance or urgency of the material for which application for rating is made.

(g) **Additional Preference Rating Assistance.**

(1) If the preference rating assigned by this order will not enable an operator to obtain material on the date when such material is required, the operator may file a PD-1a application for an improvement of the ratings assigned by this order.

(2) If there has been an actual breakdown or a suspension of operations and if the preference ratings assigned by this order or the method specified in paragraph (e) for applying these ratings will not permit an operator to obtain material on the date when such material is required, the operator in order to obtain material for this emergency may communicate by letter or telegram with the Petroleum Administration for War, Washington, D. C., Ref.: P-98b, supplying the information set forth in paragraph (f).

(h) **Exception of Operators from Provisions of Preference Rating Orders Nos. P-43, P-46, and P-100.**

No operator to the extent that he is engaged in the petroleum industry and is covered by this order shall be entitled to apply the preference rating or ratings assigned by Preference Rating Orders Nos. P-43, P-46 or P-100, and no operator to the extent that he is engaged in the petroleum industry and is covered by this order shall be subject to the provisions of Preference Rating Orders Nos. P-43, P-46 or P-100.

(i) **Communications.**

All reports which may be required to be filed hereunder and all communications concerning this order shall, unless otherwise directed, be addressed:

1) by any person located in the United States, its territories or possessions to:
Petroleum Administration for War,
South Interior Building,
Washington, D. C.,
Ref.: P-98b.

(2) By any person located in the Dominion of Canada to:
Office of Oil Controller,
Dominion of Canada,
Toronto, Canada.
Ref.: P-98b.

(j) **Violations.**

Any person who wilfully violates any provision of this order or who wilfully furnishes false information to the Director General for Operations in connection with this order is guilty of a crime, and upon conviction may be punished by fine or imprisonment. In addition, any such person may be prohibited from making or obtaining further deliveries of or from processing or using material under priority control and may be deprived of priorities assistance by the Director General for Operations.

(k) **Applicability of Priorities Regulations.**

This order and all transactions affected thereby are subject to the applicable provisions of any Priorities Regulation issued by the War Production Board, as amended from time to time.

Issued this 31st day of December, 1942.

.....

Ernest Kenzler,
Director General for Operations.

EXHIBIT "A"

1. Drills, reamers and taps manufactured of high speed steel as defined in Supplementary Order M-21-b.
2. Hacksaw blades manufactured of high speed steel as defined in Supplementary Order M-21-h.
3. Hand service operating tools.
4. Precision measuring hand tools.
5. Portable electric tools.

Amendment P-98-c

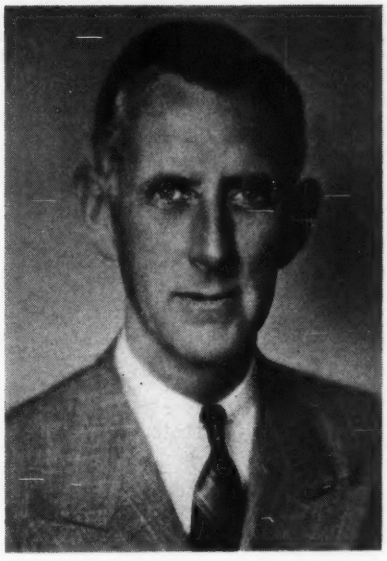
The sale of inventory stocks of materials by an oil operator to an oil industry supplier for direct resale to another operator is now permitted by WPB Preference Rating Order P-98-c, as amended upon recommendation of the Petroleum Administrator for War.

The object of the order is to permit supply houses to negotiate the sale and delivery of materials between operators. Acting in the capacity of brokers the suppliers can facilitate the movement of these materials.

Previously the order only permitted the sale of inventory stocks by one oil operator directly to another oil operator.

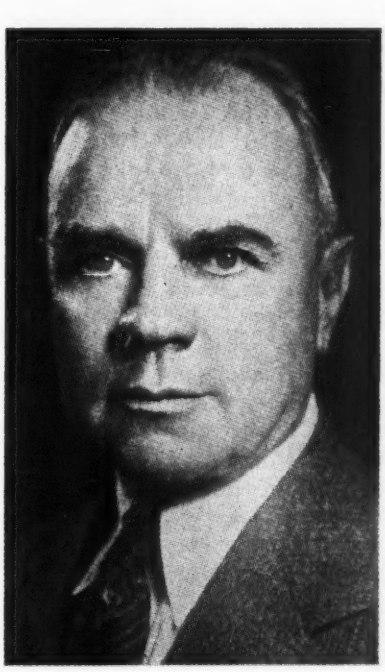
Commander Osgood Resumes Active Service

Commander W. H. Osgood has resumed active service with the U. S. Navy as Inspector, Naval Petroleum Reserves in California. Lieutenant-Commander V. H. Wilhelm, U. S. N. R., and Lieutenant-Commander H. P. Stolz, U. S. N. R., will continue to serve in this activity in the capacity of Assistant Inspectors.



Charles B. Garretson

Charles B. Garretson has been appointed acting director in charge of Petroleum Administration for War District No. 5 office,. Mr. Garretson takes the position vacated by Comm. W. H. Osgood on Commander Osgood's appointment as inspector Naval Petroleum Reserves in California. Mr. Eugene L. Davis has been named as production chief for District No. 5 office.



Comm. W. H. Osgood

Standard Oil Company of California's three newly elected vice-presidents. Left to right: F. S. Bryant, T. S. Petersen and R. G. Follis. The elections took place at the first regular meeting of Standard of California's Board of Directors' ever held in Los Angeles on December 29, 1942.

Standard Oil Names Three New Vice-Presidents

Some twenty years ago three young men went to work in modest jobs with the Standard Oil Company of California. On Dec. 29th, 1942 all three were elected vice-presidents of the company.

Announcement of the elections was made by H. D. Collier, president of Standard, following a directors' meeting held in the company's Los Angeles offices.

The new vice-presidents, already directors, are Floyd S. Bryant, R. G. Follis and T. S. Petersen.

Announcement was also made of the retirement of J. H. Tuttle, director, vice-president and treasurer, who is leaving active business life in his fortieth year with Standard of California. The new treasurer of the company is Henry C. Judd, who was in the investment banking business before joining Standard in 1930.

Mr. Bryant, one of the new vice-presidents, started with the company in 1922, following completion of his schooling as a Rhodes scholar and as a law student at Stanford. Nine of his twenty years with Standard have been spent in Los Angeles. He has been director and and assistant to the president since 1940.

Mr. Follis first went to work for Standard in 1918. After leaving to complete his schooling, he returned to the company and through the years advanced to the position of general manager of the manufacturing department. He became a director last spring.

Mr. Petersen first went to work for Standard in the Portland area twenty years ago. In 1938, while general manager of Standard Stations, Inc., he was appointed assistant to the president in charge of employee relations and personnel. He was appointed general manager of the marketing department in 1941 and became a director in 1942.

Following the meeting, the officers and directors left on an inspection of company properties in the Los Angeles area.

David Hall Retires From Westinghouse Organization

The retirement of David Hall, 68, Westinghouse engineer since 1908 and active in the electrical industry for the past 46 years, was announced recently.

Mr. Hall has headed engineering activities for his company in the Los Angeles area since 1926. He served as engineering supervisor until mid-1941, when he was named assistant to the Pacific Coast District engineering and service manager and assigned to special work. He was succeeded as engineering supervisor by his son-in-law, E. W. Morris, also of Los Angeles.

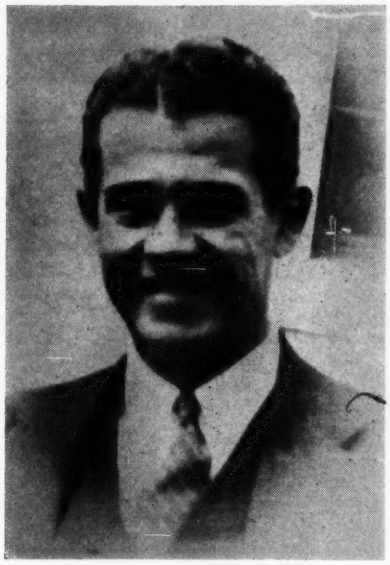
A native of Tennessee, Mr. Hall graduated from Lehigh University as an electrical engineer in 1896. He entered the electrical industry the same year and joined Westinghouse at East Pittsburgh, Pa., eight years later.

For nearly a fifth of a century, or until 1926, Mr. Hall was active in the design and construction of direct current equipment in the power engineering section at the company's East Pittsburgh headquarters plant. That period saw electrification of America's major industries such as steel mills, mines and railroads, and he played a prominent part in designing and building equipment which made that electrification possible. For many years he was responsible for the design of large direct current machines. He helped develop the first practical direct current drive for the Pacific Coast oil drilling operations.

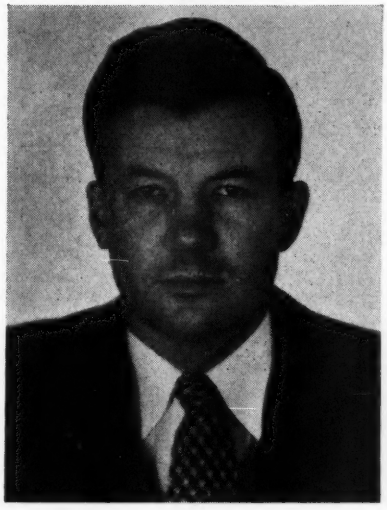
Mr. Hall is a fellow of the American Institute of Electrical Engineers and a life member of that organization. He is also a member of Tau Beta Pi and Eta Kappa Nu, honorary engineering fraternities, and of numerous other engineering and civic groups. For the past 10 years he has served as special lecturer on electrical machine design at the University of Southern California.

A General Discussion of Northwest Wilmington and It's Relationship to Torrance

By *A. L. Hunter and †Wm. Ross Cabeen
Consulting Petroleum Engineers and Geologists
*Hermosa Beach †Los Angeles



A. L. Hunter



Wm. Ross Cabeen

To date there has been no accurate or satisfactory presentation of the structural and stratigraphic relationships of the productive zones of Torrance and Northwest Wilmington. Since this area represents the most promising and practically the only area of any size that is undrilled and still relatively undeveloped in the Los Angeles Basin, it is believed that a clearer structural picture of it, together with best completion technology and recovery per acre to be expected, would be beneficial to its further development, which is necessary in aiding in alleviating the fuel oil shortage in our war program. Since nearly all of the operators in the extension of Northwest Wilmington are smaller independents, the completion technology in this area has been variable. The writers, who have engineered many of the wells in this area, have worked out certain practices which they believe advisable for best results. These are briefly discussed in the text of this paper. The last phase of this paper deals briefly with recovery, which, due to changes in permeability and thickness of formation, faulting, relative closure, etc., make estimates of recovery complex and variable. There is a great deal of disagreement between engineers on recovery in this area, much more so than in the main portion of the Wilmington Field.

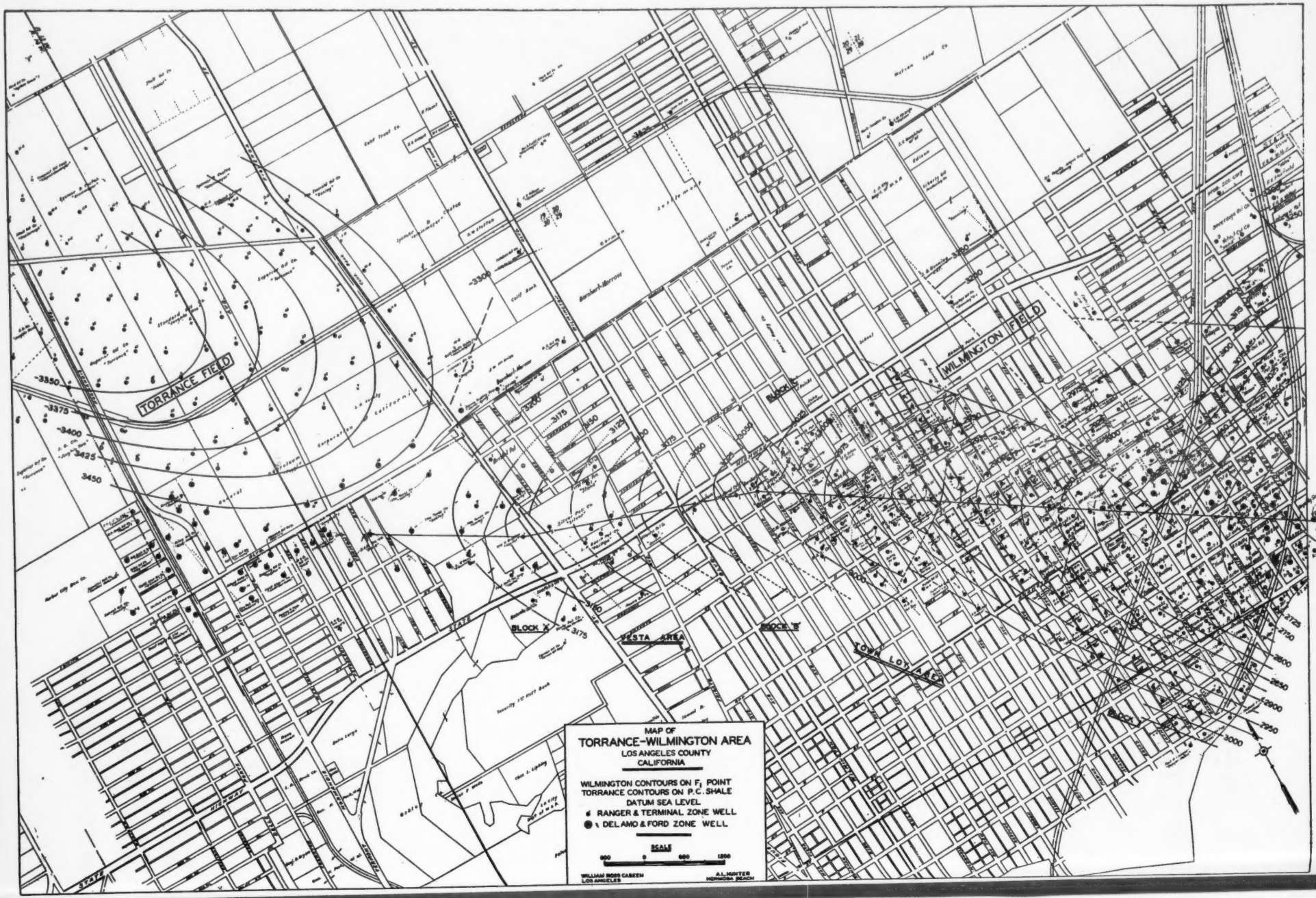
General Geology

The Wilmington Oil Field developed to date is a transversely faulted anticlinal nose plunging to the Northwest. This transverse faulting has divided the field into structural blocks and has been responsible for its extension to the Northwest into the Harbor City area. These faults form sharp lines of demarcation as to well productivity, oil gravities, edge water limits, and gas-oil ratios.

Four productive zones have been discovered in the Townlot area of Northwest Wilmington. These zones in descending order are the Tar and Ranger (Pliocene), and the Terminal and Ford (Miocene).

The Tar Zone is of middle Repetto age and is approximately 100 feet thick. The zone contains very heavy oil (13°), as it name implies. About 80% of the zone is sand. The productive limits of the zone are not as extensive as the underlying Ranger and Upper Terminal Zones. The Tar Zone is only productive in the southeasterly portion of the area under discussion, that is, Block I and the uppermost structural portion of Block C (see accompanying map and structural section); in the remainder of the area it is wet and non-productive. The D_1 electrical log point marks the top of the Tar Zone. Above this highest productive zone of the Wilmington Field lies approximately 750 feet of Upper Middle and Upper Repetto, composed of light to dark brown, silty and sandy shales, thin beds of siltstone and sandstone (shells), and sand. Overlying the Repetto unconformably is found Upper and Middle Pico of Upper Pliocene age which varies from 1000 to 1300 feet in thickness and is mainly arenaceous with streaks of blue gray micaceous shales in the upper part and light brown silty to sandy shale in the lower portion. Overlying the Pico formation unconformably are the poorly consolidated Pleistocene and Recent deposits which are composed of surface soil, sand, gravel, boulders, and arenaceous blue clays, which vary in thickness from six to eight hundred feet.

The Ranger Zone (Lower and Middle Repetto-lowermost Pliocene) blankets the entire field and is the most extensive of any of the producing zones. The F_1 point on the electric logs mark the top of the zone the "G" point the bottom. The average thickness of the zone is 240 feet. This zone is immediately above the Pliocene-Miocene contact and due to the existence of an unconformity between the two geologic formations is variable in lithology immediately above this contact. The Ranger Zone overlying this unconformity is distinct in lithology from the Upper


TORRANCE FIELD
WILMINGTON FIELD
BLOCK X
BLOCK B
VESTA AREA
TOWN LOT AREA
-3350
-3375
-3400
-3425
3450
3300
3325
3175
3150
3125
3100
3000
2950
2900
2850
2800
2750
2725
2700
2650
2600
2550
2500
2450
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50
STATE
MAP OF
TORRANCE-WILMINGTON AREA
LOS ANGELES COUNTY
CALIFORNIA
WILMINGTON CONTOURS ON F_3 POINT
TORRANCE CONTOURS ON P.C. SHALE
DATUM SEA LEVEL
RANGER & TERMINAL ZONE WELL
DEL AMO & FORD ZONE WELL
SCALE
600 0 600 1200
WILLIAM ROSS CABEEN
LOS ANGELES
A.L. HUNTER
HERMOSA BEACH

Terminal Zone underlying the unconformity. The Ranger Zone is composed of light greyish brown foraminiferal shales interbedded with medium textured to fine silty black unconsolidated sands. The largest grain size and best sorting occurs at the top of the zone, whereas the lower portion of the zone is more silty and less well sorted. The Ranger oil averages 16° in gravity and is a black oil with a tarry odor.

The Upper Terminal Zone underlying the Ranger (Lower Pliocene) Zone is of Upper Miocene age, and, as mentioned, is separated from it by an unconformity. The approximate top of the Miocene is marked by the "Poker Chip" shale, which has for many years been used as a marker for the top of the Miocene in the west portion of the Los Angeles Basin. According to Wissler*, the top of the "Poker Chip" shale tends to come approximately 30 to 40 feet below the Miocene-Pliocene contact. Thin layers of impure diatomite are associated with this finely laminated (platey) light to dark brown "Poker Chip" shale. The top of this lithologic marker is the "G" point on the electric log. The Terminal Zone is characterized by semi-platey to platey brown to black fossiliferous shales interbedded with medium to coarse grained well sorted brown quartzitic oil sand. The Upper Terminal Zone is distinct from the Ranger by its characteristically lighter colored higher gravity and better sorted oil islands. The gravity range of the oil from this zone is from 18° to 20°.

The Ford Zone is only being produced in the southeastern portion of the area under discussion. This area and the wells producing from it are designated on the accompanying maps. The Ford Zone is of Upper Miocene age and is approximately 700'-800' thick. The zone occurs between electric log markers Am and AW. The gravity of the oil ranges between 28° and 32°.

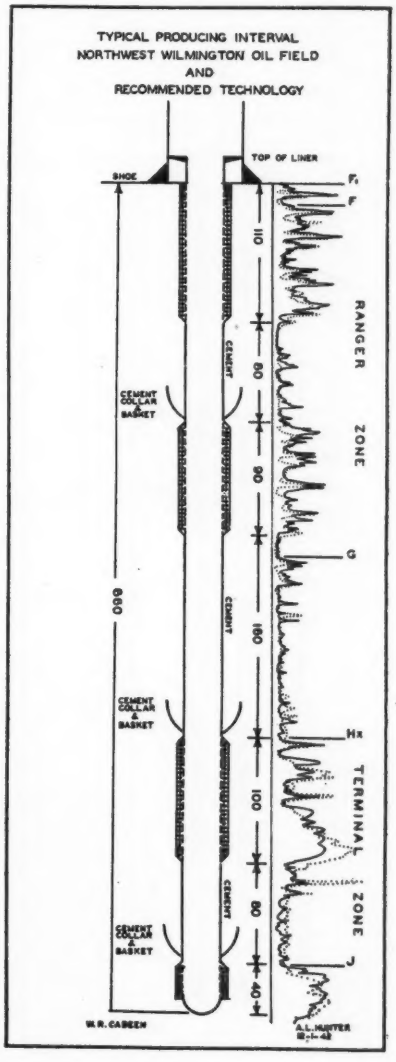
Lower Terminal and Ford Zone possibilities have not been fully explored throughout most of the area under discussion. In the light of this study the writers believe the possibilities are enhanced, as certain indications are revealed which suggest areas suitable for testing these lower reservoirs.

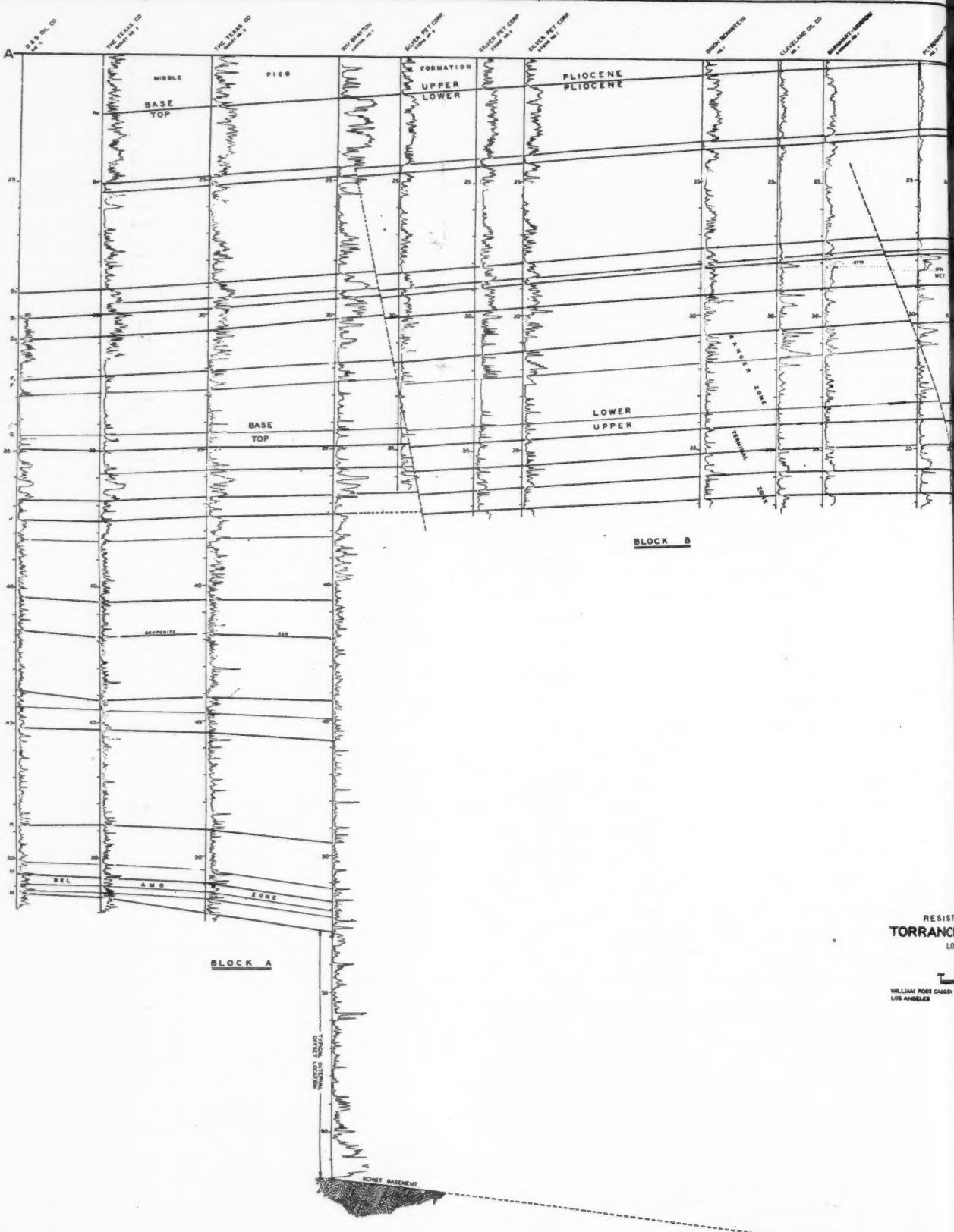
In the Torrance Field the "Main" Zone is roughly equivalent in age to the Upper Terminal of Northwest Wilmington. The other producing zone of Torrance, the Del Amo, is roughly equivalent to the lower middle and upper lower portion of the Ford Zone of the Wilmington Field proper or the deep DeSoto Zone of Long Beach (Signal Hill).

Structure and Stratigraphy

The Torrance structure is a complex structural nose plunging in a general southeasterly direction conforming for the most part to and dominated by an irregular nose or schist ridge in the basement schist. As the Torrance schist structure, rising in a northwestwardly direction, approaches the ocean at Redondo (approximately seven miles west of the Harbor City area) the strike swings in a more northerly direction and in general follows the coast line with irregular relief toward Playa del Rey. The fact that the basement schist played a dominant part in the formation of the Torrance structure is shown in the thickening and change in sedimentation in relation to the schist relief. The most marked effects, as would be expected, are to be found in the lower part of the section nearest the basement. Later folding after deposition undoubtedly accentuated the original schist influenced relief to varying degrees throughout the structure of the Torrance nose. The local and irregular development of the Del Amo Zone in the Torrance Field reflects these effects on accumulation. Change in sedimentation from the flank areas over the Crest has also been instrumental. It is interesting to note that Del Amo production in general is limited to the southwest flank of the Torrance nose while the Main Zone production is confined chiefly to the opposite limb or northeast side of the structure. Later folding is indicated by the fact that although closure dies out upward in the section away from the basement relief, it does not do so as rapidly as would be expected if closure was entirely due to thinning over basement relief and compaction. Above an unconformity separating lower Pliocene (Repetto) and Upper Pliocene (Pico) the Upper and Middle Pico and Pleistocene dip and thicken westward in an opposite direction to the southeasterly plunging and thickening beds of Lower Pliocene and Upper Miocene overlying the schist.

The northwesterly plunging Wilmington nose has by normal and horizontal shear faulting extended production northwestward into the vicinity of the Torrance Harbor City area. In the Harbor City area the southeasterly plunging Torrance structural nose and the northwesterly plunging Wilmington nose over-




A
MIDDLE
BASE
TOP
PICO
FORMATION
UPPER
LOWER
PLIOCENE
PLIOCENE
BASE
TOP
LOWER
UPPER
BLOCK B
BLOCK A
SCHIST BASEMENT

RESISTIVITY LOG A-A'

TORRANCE-LOMITA AREA

LOS ANGELES COUNTY

lap en echelon, the Torrance nose dying out southeasterly into the flank of the Wilmington fold and the Wilmington nose dying out northwestwardly into the flank of the Torrance fold. (See accompanying structural contour map Plate 1 on Ranger of Wilmington and Main Zone (Terminal) of Torrance showing relationships). Thickening off the Torrance structure opposite to the plunge of the Wilmington structure causes the Wilmington northwesterly plunging structural closure to die out at depth and reverse in direction to a southwesterly plunge. This reversal at depth due to thickening limits the saturation in the Upper Terminal in the Vesta area of Northwest Wilmington (see accompanying structure section). This reversal of plunge at depth due to thickening off the Torrance schist high opposite to the northwesterly plunge of the Wilmington structure in the Harbor City area is overcome in the Townlot area of Wilmington in the vicinity of the Townlot Ford Zone area and results in closure. A thickening of 1400 feet in a southeasterly direction opposite to the plunge of the Northwest Wilmington structure and off the Torrance schist high, in a distance of two miles is shown on the accompanying structural cross section. The greatest closure effect of plunge opposite to thickening is of course most marked at depth where thickening is greatest. The writers, on an accompanying map, have contoured this portion of the Townlot area on one of the lowest electric log points on the Ford Zone, the "AV" point. This shows some complete closure in all directions at this depth below the Ranger and Terminal Zones which are northwesterly plunging with closure (excluding minor faulting) in but one direction. This reversal of dip opposite to the plunge due to thickening against plunge, although of relatively small effect in the Ford Zone, has produced a small closure and terrace effect which probably explains the unexpected good Ford production in the Townlot Ford Zone area so far down plunge, with production comparable to the "up structure" Ford Zone production. In contouring on the "AV" point it was noticed that on the electric logs the thickening effect was partially masked by the arbitrary designation of the "AV" point on a lower point north of Anaheim and a higher point south. This closure shown in the lower portion of the Ford Zone undoubtedly increases with depth. It is the writers' belief that the section below the Ford Zone in this area contains closure which should offer very promising production possibilities. The Royalty Service B7 well in the Harbor area (shown in the accompanying section) and the TideWater Associated Oil Company's Banning No. 1 on the north flank of the field are the only wells that have explored the section down to the schist in this area. As shown by contour map and section, they would be off the previously mentioned high. It is to be noted that the Royalty Service B7 well, although much higher in the upper zones than the wells in the Townlot Ford Zone area, (because it is high on the plunging nose) would be low in the zones below the Ford Zone. This would explain the poor showing scored by this well in the section below the Ford Zone.

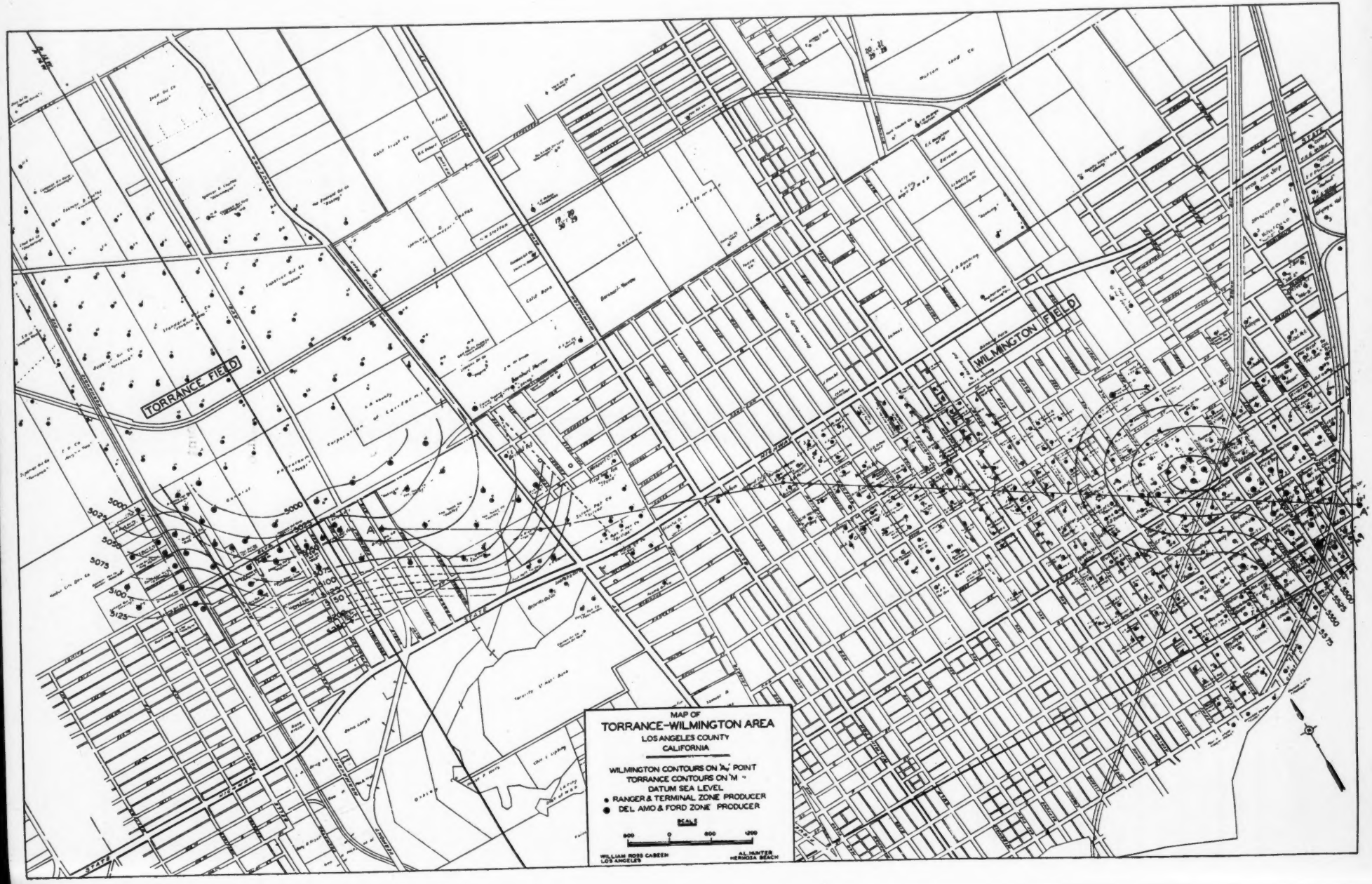
Faulting in the area under consideration consists mainly of horizontal shears crossing the strike of the plunging nose of Northwest Wilmington (see accompanying contour map). These faults show a very small apparent vertical displacement, however, their effect on production is marked. Crossing the strike of the plunge of the nose as they do, they effect local closures which are in part responsible for the extension of Northwest Wilmington. Immediately in the northwesterly down plunge side of these faults a marked increase in the production and decrease in cut (due to change in edge water limits) of the wells in comparison to those on the immediate up plunge side of the fault is to be noted. These faults also form sharp lines of demarcation as to oil gravities and gas-oil ratios. Such a sharp demarcation due to faulting is especially noteworthy in cases where the faults do not show a vertical offset of over 10 to 12 feet, as in this area. The probable explanation of this is that the actual and greatest amount of movement was horizontal. On a flat structure of this kind with the faults cutting across the folds obliquely a horizontal movement of several hundred feet would only produce a very small vertical displacement, as is found. Horizontal movement, as the principal movement, is also indicated by a difference in thickness of the sediments on the two sides of the faults, the probable explanation of which is horizontal movement of the side showing the greatest thickness from one of the flank areas of the fold. The sediments thicken rapidly down dip on the flanks to the northeast and southwest.

The Torrance and Wilmington fields are believed by the writers to be dynamically related. Torrance, as previously mentioned, is a schist dominated structure formed on a southeast plunging schist ridge. This ridge projected eastward passes immediately north of the north flank of Wilmington. The Wilmington structure is more nearly a true fold, forces producing it and instrumental in adding relief and faulting to the Torrance structure are believed to have been from the south or southwest. It is believed that the Torrance schist ridge during this folding acted as a buttress (equivalent to an opposite force) against which the Wilmington fold was formed. The cross-shears which divide the structure into blocks were formed toward the end of the folding by the forces from the south or southwest. The true normal faults of the field (not apparent normal faults produced by horizontal shifting) or gravity faults probably represent the adjustment phase of movement.

Engineering Technology

Production in the Northwest Wilmington area has borne out the wisdom of certain completion practices.

The common practice in Northwest Wilmington has been to spud in with a 20" bit and set 80 to 100


TORRANCE FIELD
WILMINGTON FIELD
MAP OF
TORRANCE-WILMINGTON AREA
LOS ANGELES COUNTY
CALIFORNIA
WILMINGTON CONTOURS ON "A" POINT
TORRANCE CONTOURS ON "M"
DATUM SEA LEVEL
• RANGER & TERMINAL ZONE PRODUCER
• DEL AMO & FORD ZONE PRODUCER
SCALE
600 0 600 1200
WILLIAM ROSS CABEEN
LOS ANGELES
A.L. HUNTER
HERMOSA BEACH

feet of 16″ conductor pipe. Thereafter a 12¼″ hole is drilled to the anticipated top of the Ranger Zone, after which an electric log is run for the selection of the "F_1" marker for the casing shoe point. The hole is then reduced to 7⅝″ through the oil zone and usually carried down 685′± to and including a varied penetration of the 40′ thick "J" sand. (Some of the wells down plunge as far west as Figueroa and beyond should not penetrate into it but should stay above a shell marker which is 85′ stratigraphically above the "J" point. A 7″ or 8⅝″ water string is then run to the F_1 point where it is cemented. Some wells set (100′±) above this and take in approximately 26′ (total sand interval thickness) of oil sand to be found below the main Tar Zone sand body and above the "F_1" point. The main Tar sand is wet in blocks A, B, and all except the structurally highest portion of block C (see resistivity profile A-A′). When cementing the casing, enough cement is usually put away (600 sax±) to overlap the base of the poorly consolidated fresh water reservoir beds of the Upper Pico (which point usually occurs at approximately 1700 feet) and thus protect surface waters. (This method of protecting surface waters in this district has only recently been permitted. Previous to this, cementing through a collar at approximately 1000 feet was required. Before use of the cement collar—Hayward or Lane Wells—which could be opened for putting away cement and then closed, operators were required to shoot holes to put away the cement for this surface shut off and then test its effectiveness by reperforating. The old method of using a surface string to protect surface waters has not been required since the summer of 1941). The Division of Oil and Gas requires a shoe test of the water string, to be witnessed and approved by their engineers. After making the water shut off test, required by the State Division of Oil and Gas, the cement below the shoe is drilled out. The hole in many cases is then underreamed. The next step is to run pre-packed gravel liner to bottom, blanking off the shaley portions of the section. The electric log run on the interval below the F_1 point (shoe point) is used to determine the intervals to be produced and those to be blanked in the combination liner. There are three sections that are usually blanked; (1) that shaley interval approximately 50 feet in thickness occuring between the two main sandy phases of the Ranger Zone, (2) the interval between Ranger (Pliocene) and Terminal (Miocene) varying in thickness from 165 to 190 feet, according to the particular location, its structural position, etc., and (3) the "J" shale which is approximately 90 feet thick. (See diagrammatic section, Plate IV.)

Cementing the blank liner sections in Northwest Wilmington has proven to be the wisest procedure. The advantages of cementing the blank intervals are:

(1) To assist in the prevention of liner collapse due to production of sand from below these blanked shale intervals and the resultant removal of their support in the hole which together with disintegration of the overlying shale by absorption of water causes these shale intervals to move in against the liner and collapse it, which usually necessitates the expense of a redrill job. The source of water in the Ranger-Upper Terminal section in Northwest Wilmington is found in thin grey sand streaks in the predominately shale intervals (2) and (3) mentioned above. Source of the water in these intervals has been found by core data and water witch determinations and varies stratigraphically from one fault block to another depending upon factors governing the accumulation of fluid in each fault block. Therefore, it follows that the technology to be applied will vary according to the fault block and the position of the well under consideration in that fault block. A surprising number of liners in wells in Northwest Wilmington have collapsed in the last few months. In all of these wells the blank sections had not been given support by cementing.

(2) by cementing these blank sections the above mentioned wet streaks occurring in these shaley intervals are cemented off, giving the well a much lower cut. This also stops the disintegration of the shale by the water behind the blank which aids in and leads to collapsing the liner.

(3) If at any time it is necessary to plug the well back, it is only necessary to put a bridge plug in the cemented blank to make an effective shut off. In Northwest Wilmington this is especially important as the "J" sand, in the lower portion of the hole, is in certain areas the most likely member to go wet first and result in the necessity of the plugging of the bottom of the hole. (Where an easy and effective method of plugging back can be effected it often makes it worth while to include a certain portion of a thick sand like the "J" and produce it for a period even though it may become wet before the rest of the zone. Much oil may be recovered not otherwise possible.)

Cementing of these blank sections requires little expense and time as compared to the benefits and insurance derived. The normal procedure requires a series of cementing collar and basket at the base of each blanked section as shown in the diagrammatic plan, (Plate IV). The cementing procedure is carried out with the use of a series cementing tool run on tubing or drill pipe. The tool is lowered to the base of the lowermost blank and seated in its respective collar. A typical procedure is to put away enough cement behind the blank to fill about ¾ of the annular space behind the blank. This procedure is normally followed to restrict contamination of the perforations above the blanked section in the event of channeling. After putting away the cement the tool is raised to the base of the perforations immediately above the blank

and circulation is reversed to wash out any excess cement that may have accumulated as a result of channeling behind the perforated interval. The tool is then raised to the next blanked section above, and the process repeated. Tubing is then removed from the hole. If the procedure of cementing the blank sections is not followed, running a basket at the base of the blanked intervals will often assist in effecting a formation shut off on the wet streaks behind the blank above the basket. Furthermore, by the use of baskets at the base of the blank section a favorable means is provided by which corrective measures may be resorted to in the future. After cementing operations are concluded the tubing is run into the hole with a washer and then the mud column is displaced with water, following which the perforations are thoroughly washed. After washing, the well is put on production in a manner suitable to conditions of structural location and conductive to best production practices.

Recently the Division of Oil and Gas has permitted the use of a combination water string and liner, in which case the liner is run with the casing, and the water shut off over the producing formation is made through a whirler collar with solid bottom baffle and basket. Perforating immediately above the collar to test the effectiveness of the shut off is presently required by the Division of Oil and Gas. After the shut off test is made and approved, the solid bottom baffle is drilled out and the hole cleaned out to bottom in preparation for the series cementing operations on the blanked intervals as previously described.

Gravel packing has been used in the largest majority of cases in this area to overcome sand trouble encountered principally in the Ranger zone. Close spacing and competitive withdrawal rates have made this practice necessary. A number of operators in the main Townlot portion of the field have used conventional liners, without success. Production of excessive amounts of sand and in many cases final collapse of the liner necessitates redrilling, after which gravel pack liners were installed. In these cases it must be pointed out that proper support was not given to the shale intervals as discussed above, and the wells were produced in competition with closely spaced offsets. Some of the wells in the north flank of Wilmington which are more widely spaced, low pressure flank wells have successfully used the conventional liner. It is believed by many that gravel packing, due to silting up of the bore of the hole and the gravel pack creates an artificial decline to the wells. Some production men contend that a conventional liner may be successfully used in a low pressure area, provided that a suitable back pressure is maintained against the formation. Sand control by means of back pressure does not permit as high a daily yield as by control through gravel packing, however, it is maintained that in many cases that (excluding competitive draining from close townlot offsets) over a period of time the slower decline without gravel pack yields more oil in the ultimate.

Recovery or Expectancy

Marked changes in stratigraphy as one goes from the main portion of the Wilmington field northwestward through Northwest Wilmington toward Torrance coupled with complicated faulting, flattening of the structure, etc., influencing the amount of vertical and horizontal zonal saturation, makes it necessary in estimating recovery to consider each portion of the area separately and on its own characteristics and merit.

Grouping the Northwest Wilmington extension into three general groups comprising fault blocks A. B, and C, some of the physical conditions and safe amount of zone to include in each are as follows:

Block A:

Thickness of Ranger and Terminal Zones—485′ (including from F_1 point to shell marker located approximately 85′ stratigraphically above "J" sand). Total aggregate productive sand thickness of this interval is 110′. In certain cases the 100′ interval above the F_1 marker is included. This provides an additional 26′ of productive sand.

Gravity of Ranger Oil=16°

Gravity of Terminal Oil=18° to 20°

Average porosity for both zones =15%

Average saturation=75%

Block B:

Thickness of Ranger and Terminal in upper structural portion of block (includes the 110′ interval above F_1 marker and the full total 40′ penetration of "J" sand)=760′. Total aggregate producable sand in interval—190′.

Lower structural portion of block (F_1 point to and including 20′ penetration of "J" sand)=600′. Total aggregate producable sand in interval=150′. F_1 point to shell marker=510′. Total aggregate producable sand interval=127′.

Use same average porosity, saturation and gravity values as Block A.

Block C:

Lowest structural portion of block (includes from F_1 point to and including 20′ penetration of "J" sand)=670′. Total aggregate sand thickness=167′.

Highest structural portion of block (including from F_1 point to and including full 40′ penetration of "J" sand=175′.

A few locations in the highest structural location of this fault block are producing from the main Tar Zone. This interval is 100 feet thick with a total aggregate producable sand thickness of 90 feet, an average porosity of 30%, and a saturation of 85%. The water table in the Tar sand as shown on the accompanying section A-A′ indicates an early flooding of this zone at these highest structural locations in this block.

Average effective porosity of

Ranger and Terminal Zones=15%.

Average saturation of Ranger and Terminal=75%

Average Ranger gravity=16°

Average Terminal gravity=18°-20°

Barrels recovery per acre foot in Northwest Wilmington varies from 250 to 400 depending upon local conditions of effective porosity, gas-oil relationship and ratio, gravity of oil, connate water, date of completion relative to offset wells, etc. Recovery per acre varies from 25,000 to 75,000 depending upon thickness of zone possible to include under local structure conditions and factors influencing recovery per acre foot mentioned above. These figures are based on an assumed 5 acre spacing. Disregarding economic factors it is of course obvious that closer spacing will increase relative barrels per acre recovery. The above recovery per acre figures are figures which are not in accord with extreme cases often cited where very large recoveries have been obtained from a well on a one acre lease, which has obviously partially drained a much larger acreage involving a considerable area surrounding the lease involved. Such wells are usually wells that have had the advantage of being among the first drilled. **The writers believe 5 acre spacing to be the most prudent from an economic and engineering standpoint.** It is believed that the present 10 acre spacing will not adequately drain the Northwest Wilmington area. With the present great shortage of this strategically located low gravity crude and the shortage of steel, the greatest crude recovery that can possibly be made with the least expenditure of crucial steel is the ideal, if the element of time is disregarded. However, the time element alters this ideal condition from the standpoint of obtaining this greatly needed vital crude for the war and during the time of the prosecution of this war. Under theoretical conditions of spacing, the time of withdrawing the oil is prohibitably lengthened. This much greater period of time also brings in economic considerations of investment. From this standpoint the 5 acre spacing is also the best.

Under the present 10 acre spacing policy, assuming that there are 650 undrilled productive acres to be developed, and using the average recovery for the first year of production in Northwest Wilmington of 30,000 barrels per well, it is apparent that this area which represents the greatest portion of the proven reserves of the entire Wilmington field could only supply as a **maximum** in this first flush productive year, less than two million barrels. (Actually it would be much less than the above figures as it does not allow any time for the drilling of these wells, which under present conditions of scarcity of labor and materials would be considerable.)

There has been a tendency of over exaggeration of initials and ultimates in this area because of the desire to obtain as high allowables as possible. Since the proration of production in Northwest Wilmington has been lifted (Feb. 1942), because of the urgent need for it in prosecuting the war, the true productive rates, of which the wells in this area are capable, have been more clearly shown. An approximate average initial production figure for the undeveloped proven portion of Northwest Wilmington will not be in excess of 100 B/D.

Conclusion

Northwest Wilmington offers an area for future development of reserves the most promising of which are: (1) Approximately 550 acres east of Frigate and north of State (there is also approximately 100 acres in the area south of State) offering Ranger and Upper Terminal Zone development. Relative merit of acreage and completion technology of these undeveloped areas require individual evaluation and analysis along the outline suggested in this discussion.

(2) Sub-Ford Zone production in the Townlot Ford Zone area, discussed in the text in detail.

(3) In blocks B, C, and portions of Block I, formations below the base of Upper Terminal have not been penetrated. Structural complexities as now revealed suggest possibilities in Lower Terminal, Ford, and Sub-Ford Zone equivalents. These possibilities are suggested in the accompanying profile section A-A′ and structure contour maps.

It might also be stated that the area shown on the upper right hand portion of the enclosed contour maps offers good possibilities of small long lived low gravity Ranger production.

In the development of the smaller Ranger wells in Northwest and North Wilmington it is highly important that all factors are considered in effecting the proper completion technology best suited for the particular set of conditions involved. Profitably exploiting of the last smallest productive areas of Wilmington will not permit mistakes made in the more flush portions of the field.

There are also a few undrilled areas in Torrance which in the event of price adjustment might be well worth drilling to help supply the present shortages of low gravity crude.

The greater risk in these areas near the edge limits of the field, the much lower expectancy per acre (saturated sand thickness much less, especially thin in North Wilmington) and the present high cost of development and operation make certain portions of these areas of doubtful commercial worth when evaluated on the relatively low current market price of this vital crude.

*Wissler, Stanley G., "Stratigraphic Formations of the Producing Zones of the Los Angeles Basin Oil Fields", State of Calif., Dept. of Nat. Res., Div. of Mines Bull. 118, Part II, August, 1941.

Buy War Bonds

THIS LAUGH

OFF!!

The Almighty Pound

Our London spy reports that Winston Churchill recently hailed a cab in West End and told the cabbie to drive him to BBC, where he was scheduled to make a speech to the world.

"Sorry, sir," said the driver, "ye'll 'ave to get yourself another cab. I can't go that far."

Mr. Churchill was somewhat surprised and asked the cabbie why his field of operations was so limited.

"It hain't hordinarily, sir," apologized the driver, "but ye see, sir, Mr. Churchill is broadcasting in an hour and I wants to get 'ome to 'ear 'im."

Churchill was so pleased he pulled out a pound note and handed it to the driver, who took one quick look at it and said, "Hop in, sir. T'hell with Mr. Churchill.

0300 O'Clock

In the Army and Navy, they let you sleep until 0545 and they tuck you in bed at 2200. You don't go off duty at a quarter-to-four, but at 1545, under the 24-time system adopted July 1, doing away with A. M. and P. M.

To soldiers, however, 0545 is just as early as a quarter-to-six.

If this idea spreads to civilian life, Marshall Field's magazine P.M. will have to change its name to 1200-2400. And wives will be heard to remark acidly over the breakfast table: "John, did I hear you come in at 0300?"

The geologist was about to register in the small town hotel when a bedbug slowly crawled across the register. "Well," he said to the manager, "I've been bitten by all sorts of bugs in hotels, but this is the first time I ever saw a bug crawl down to see what room I'll be in."

Transatlantic Discipline

The Army builds respect for superiors and P.M. has proof of that.

Hanley Stafford, who is Daddy to Baby Snooks on the Maxwell House Coffee Time program, has a son in the RCAF in England.

Wondering if England could hear the broadcasts, Stafford cabled his son, asking if he heard him each week.

Some days later the son cabled back.

"YES."

By this time Stafford had forgotten his original question and was deeply puzzled, so he cabled again.

"YES, WHAT?"

The son wired back, quick as a flash:

"YES, SIR."

She was just a secondhand furniture dealer's daughter and that's why she wouldn't allow much on the old davenport.

"Who was that cute girl you were talking to so long?"

"Oh, just an old girl friend."

"What did she have to say?"

"No!"

"Are the hot irons ready?"

"Yes, master, red hot."

"Is the oil boiling?"

"Yes, master, searing."

"Is the victim tied securely to the massive chair?"

"Yes, master, she cannot move."

"Has the shroud been placed over her lithe figure?"

"Yes, master, Heh, heh, heh!"

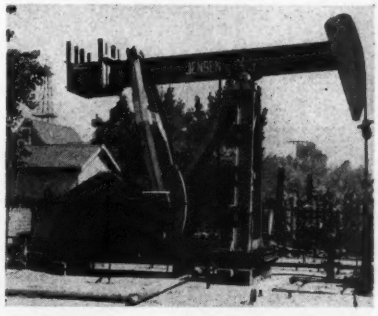
"O. K. Give her the $2 permanent."

Here's to the pictures on my desk,
May they never meet.

Judge: "Sorry, but I can't issue a marriage license to your grandchild; she's only 15 and too young."

Old Granny: "Lawdy, mister jedge, wot we gwine do? She ol' nuf to do wot she's done did."

(14-DC JENSEN JACK on 3000' Calif. well)



When a Producer Makes Up His Mind!

When a producer really makes up his mind to get to the bottom of the pumping equipment question . . . well, we figure he's our meat!

Because, in all seriousness, a thorough investigation will sell any man on JENSEN JACKS. No other way to pump a well is so completely satisfactory. We are the oldest and largest exclusive manufacturer in the business.

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Nomads December Meeting

The experiences of a man who had twice been in a Nazi concentration camp were told at the regular monthly meeting of the Los Angeles Chapter of Nomads held in Los Angeles, Wednesday evening, December 9, 1942. Preceding the dinner a short business session was held at which the nominating committee selected to nominate chapter officers and regents for the coming year presented its report. After the list of nominees was read, other nominations were made from the floor. The officers will be voted upon by ballot before the Annual Meeting in January at which time the result of the voting will be announced.

Guests at the December Meeting of the Los Angeles Chapter of Nomads. From left to right: R. W. McCool, Ernest H. Smith, Kenneth Walker and M. H. Hobbs.

The speaker of the evening was Dr. Kenneth Walker, philosopher, lecturer, musician, author and Nazi prisoner. He told of his three interviews with Hitler, one of which took place in the secret retreat back of Berchtesgarten. These interviews led to his arrest by the Gestapo and internment in Neueremberg prison. After once being released from prison he spent some time in America and European countries and then went back to Germany. This ended in another arrest and confinement at Neueremberg. Dr. Walker told of some of his experiences while in prison. He has also lived a number of years in Italy and after his talk answered questions about the conditions in that country.

Among the guests present at the meeting, which was the largest for several months, were the following men from other countries: Ernest H. Smith of California Arabian Standard Oil Company; Bob McCool of Trinidad Leaseholds, Ltd., M. H. Hobbs of Nederlandsche Koloniale Petroleum Maatschappij; and J. C. B. Vandenberg of Bataafsche Petroleum Maatschappij.

Fluor Opens N. Y. Office

In a move that provides direct company representation on the Atlantic Seaboard, The Fluor Corporation, Ltd., announces the opening of a direct company branch office in New York City at 1919 R.C.A. Building, 30 Rockefeller Plaza with J. I. Lawrence, formerly of the company's Kansas City office, in charge.

The new office is staffed and equipped to handle all matters pertaining to the sale of Fluor Atmospheric Aerator and Mechanical Draft Cooling Towers, Fluor Gas Cleaners and Fluor Mufflers and direct company-customer contact on matters pertaining to the design, engineering and construction of synthetic rubber, toluene, aviation gasoline, alkylation, isomerization, recycling, natural gasoline and gas transmission plants and refineries in this area.

Worthington Pump and Machinery Corp. have just published two new bulletins—Bulletin S-550-B21, covering CCG Gas Engines and Bulletin W-350-B2C on Antaciron Centrifugal Pumps, Types CR and CU.

These bulletins may be obtained by writing the General Office at Harrison, N. J. or the branch office at Los Angeles or San Francisco, Calif.

The shrouds of a single army parachute contain as much nylon as three dozen pair of stockings, or more than a year's supply for the average woman.

Wendell Thayer, special assistant to President, Union Oil Company.

Union Oil Company has announced the appointment of Wendell Thayer as special assistant to the President. Mr. Thayer has been assigned to government-labor relations duties.

An alumnus of the University of California, Los Angeles, and the Loyola Law School, Mr. Thayer was formerly associated with the Los Angeles Stock Exchange, H. J. Barneson & Company, the office of the California State Oil Umpire, and since 1935 has served as Southern California Editor for the Wall Street Journal.

Out of a little more than 144,000 buses in the U. S., 87,500 are school buses. 36,500 carry passengers within cities, 18,000 carry passengers between cities, 25,000 carry excursionists.

More than ten billion pounds of dynamite were required to build Boulder Dam. In ordinary years, this country uses about one million pounds of dynamite each day. This year the United States will probably use almost half a billion pounds.

It takes about 75 pounds of cotton to equip and maintain a soldier for one year—two or three times that much if he's on combat duty.

It takes 50,000 man-hours of work to build a medium bomber as against only 200 for an auto.

REHABILITATION OF OLD WELLS

(Continued from Page 7)

was made and the sand located. From the log the most desirable shooting depths were selected and the well there gun-perforated. The bullets had to penetrate the three strings of casing as shown, together with the cement between the strings and in the annulus between the outer string and the wall of the hole. A large increase in production was obtained, the oil from the cased-off zone being added to the production from the lower zone.

While the actual gun-perforating operations in this well were more or less of a routine nature, the preliminary work made the job economical and effective. The sand was not known to exist when the well was drilled and when its presence was discovered in surrounding wells there was no definite record to aid in locating its depth in this particular well. By correlation the general location of the sand could have been determined; but by first running a Radioactivity Log the top and bottom limits of the zone were located accurately and the most advantageous points at which to perforate were selected.

Gun-Perforating Tubing to Recomplete

The gun-perforation of tubing has also been used to advantage to increase the supply of heavy oil in California. There are several wells which have been recompleted by gun-perforating the tubing in two-zone wells in order to get more of the heavier oil from the upper zone during the remainder of its flowing life and to provide for its pumping when it ceases to flow. One of these wells is illustrated in Fig. 2.

The liner in this well had been set through the upper and lower zones with perforations opposite both zones. Between these zones the liner was blank and was there cemented when the well was completed. Tubing extended into the lower zone and was packed off in the liner above this zone so that oil from the lower zone was produced through the tubing and oil from the upper zone flowed into the annulus between the tubing and liner and up between the tubing and casing.

It was decided to shut off the lighter production from the lower zone and to produce the heavy oil from the upper zone through the tubing. This would permit pumping of the upper zone oil when it ceased to flow and this factor had to be considered in the continuation of the heavy oil production since this production was nearing the end of its natural flowing life. To do this a plug was set in the tubing above the packer to shut off flow from the lower zone and four holes were then gun-perforated in the tubing above the plug. The bullets and loads used with the tubing-size gun perforator were designed so that they would penetrate the tubing but not the liner, since the depth at which the tubing was perforated was in the blank pipe which was believed to be shutting off water at that particular point.

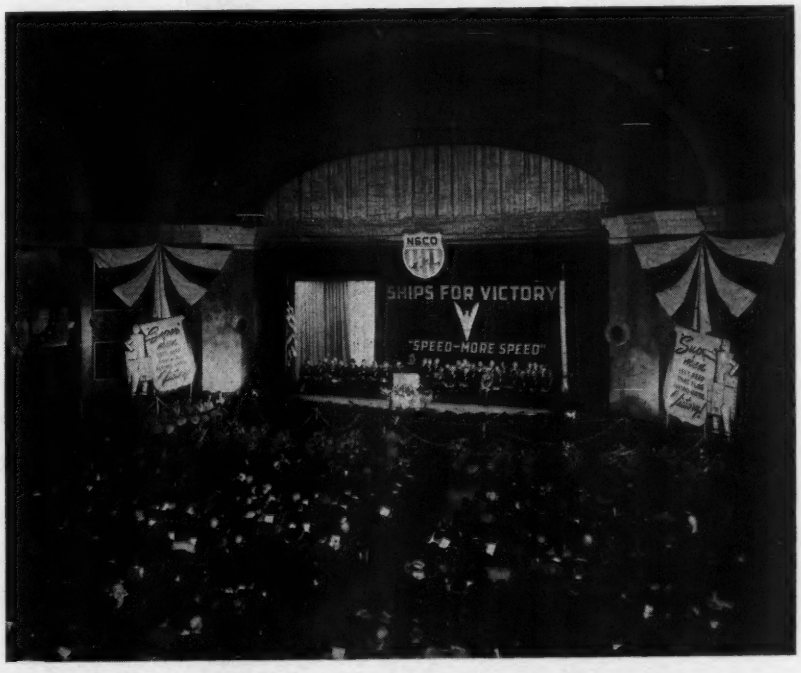
Superior Engine Division of National Supply Receives Maritime Award

Presentation of the U. S. Maritime Commission awards in recognition of outstanding production achievement was made to the Superior Engine Division of The National Supply Company at ceremonies held in Sprinkfield, Ohio, on December 17.

In presenting these awards, Rear Admiral H. L. Vickery, Vice Chairman of the U. S. Maritime Commission, said that The National Supply Company was one of the first concerns in the nation to "jump in at the beginning" and hold the line while industry as a whole was catching up with wartime demands."

A. E. Walker, President of The National Supply Company, accepted the "M" Pennant and the Victory Fleet Flag from Admiral Vickery on behalf of the employees of the Superior Engine Division of the company. "We are grateful," he said, "for this recognition of a patriotic effort to serve our country in time of war. What has been done is only a good beginning, and we promise that past records will not only be maintained, but will be excelled in the future."

Following the presentation of Employee Merit Badges, which were accepted on behalf of the employees by Mr. P. J. Shouvlin, founder of the Superior Engine Company, refreshments were served to over 1800 employees and their guests.



1800 Employees and Guests at the Presentation of the U. S. Maritime Commission Awards at the Superior Engine Divjsion, The National Supply Co.

Field Development

Los Angeles Basin

Work Planned For Chatsworth Area

Two projects are scheduled for the Chatsworth area of Los Angeles county. First under way will be J. Paul Getty's Foothill-Orchards No. 1 at the northeast corner of Rinaldi St. and Balboa road for which rig has been built. The second will be a contracted hole for W. E. Ramsey in the reservoir area.

Tide Water Seeks Aliso Extension

Tide Water Assoc. Oil Co. is grading location for Sesnon No. 2 some 1800 ft. southwest of its No. 1 on sec. 28-3n-16w at the westerly flank of the field. The No. 1 well finished in December, 1942 at 9086 ft. flowing a highest rate of 2880 bbls. of clean 23 gravity oil and 1,110,000 cu. ft. of gas to extend the field a half mile to the west. In the field the company's Porter No. 18 is cleaning out to bottom at 5490 ft. after running routine formation trials.

Shell Starting L. A. City Well

Shell Oil Co., Inc. will be first under way in a series of tests projected for the old Los Angeles City producing areas. The company is building rig for Verne Community No. 1 southwest of the intersection of First and Gardner Streets produced.

West. Gulf Comps. At Oak Canyon

Western Gulf Oil Co. finished Vesta B. Wickham No. 1, sec. 32-5n-17w, at 7166 ft. flowing through perforations in the interval 7055 to 7105 ft. The well initialed 235 bbls. of clean 32 gravity oil through a 20/64 in. bean under 200/850 lbs. pressure. On an adjacent location the company spudded M. A. Gilmour No. 1 and was last reported battling circulation at 83 ft.

Immediately northwest of the center of sec. 31-5n-17w Hathaway Company poured foundation for Rose Lechler No. 1 as a test of the Wickham zone.

Zephyr Completes Wilmington Well

Zephyr Oil Co. finished Zephyr-Banning No. 2 at the north flank of the central Wilmington field opposite Banning Park. Bottomed at 3490 ft. where a combination string including 225 ft. of gravel packed perforation was landed, the well went on the pump making 45 bbls. of 14.5 gravity oil cutting only 5.0%.

In the northwesterly field sector Morton & Dolley's Grant No. 1 is pumping a steady and substantial 170 bbls. of clean 17 gravity oil daily while Pongratz Pet. Co.'s Spring No. 2 is bobbing for 91 bbls. of similar oil.

LOS ANGELES BASIN WILDCATS

Area	Well	No.	Section	Depth	Status
Castaic	Young, Roy W., Inc., Walker	1	11, 4-16	9981	Idle
Chatsworth	J. Paul Getty, Foothill Orchards	1	6, 2-15		Rig
Del Valle	Union Oil Co. N. L. & F.	1	20, 4-17	7004	Abandoned
Las Llajas	West'n Gulf Oil Co., Brady	1	13, 3-17	6346	Drilling
L. A. City	Schirm & Rubenstein H-S	1	24, 1-13	3919	Idle
	Shell Oil Co., Inc., Verne Comm.	1	21, 1-14		Bldg. Rig
Newhall	Aztec Oil Co., Sanborn	1	6, 3-16	6894	Redrilling
	James C. Brazell, Perkins	1	11, 3-16	4473	Idle
	So. Calif. Pet. Corp., Lassalle 44-1		3, 3-16		Location
Potrero	Duquesne Oil Co., Eunice	1	3, 3-14	1016	Drilling
Puente	Barry Oil Co. Inc., Roland	1	14, 2-10	2172	Drilling
	The Flintkote Co., Turnbull	1	12, 2-11	3652	Abandoned
	Melvin Hansen, Dragna	1	24, 2-10	2840	Idle
Rio Hondo	PotreroOil Co.,Newman	1	32, 1-11	6548	Drilling
Whittier-La Habra	Los Nietos Valley Oil Co., Woodward	1	29, 2-11	3317	Idle
	H. & C. Oil Co., Joyce	1	22, 2-11	4953	Drilling
	Orange County				
Buena Park	The Texas Co., B.P.U.	5-J-1	31, 3-10		Rigging up
Costa Mesa	Chas. W. Campbell	22	15, 6-10		Rigging up
Stanton	J E. F. Oil Co., Well	1	23, 4-11		Equipment
	San Bernardino County				
Carbon Canyon	Stella, E. F., McDermont	2	5, 3-8	1085	Drilling
Colton	Supreme Oil Co., Well	1	2, 2-4	200	Stdg. cementd

Shell Quits Deep Test

Shell Oil Co., Inc. suspended Olinda Fee No. 4-42-16 in silt and gray sand at 4002 ft. after topping the Miocene near 3219 ft. The well, located 5602 ft. north and 2966 ft. west of the intersection of Citrus and Eureka Avenues in the Yorba Linda field, was scheduled to go to 4500 ft. if necessary to prospect below the heretofore produced hori-

Texaco To Drill Buena Park Well

The Texas Co. is preparing to spud a new try in the Buena Park area of Orange county. The latest attempt to define the thus far puzzling producing structure in this area will be Buena Park Unit No. 5-J-1 located 637 ft. northerly along the centerline of Gilbert St. from the centerline of Orangethorpe Ave., thence 379 ft. westerly at right angles.

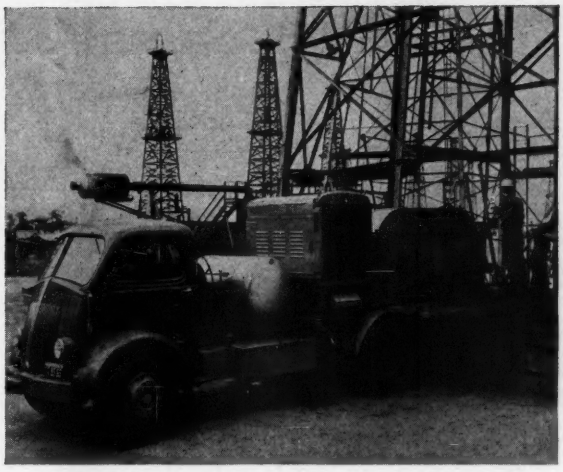
Camp To Test At Costa Mesa

Chas. W. Camp is moving in portable equipment to drill a shallow test of the Costa Mesa area in Orange county. The well will be drilled at southeast Harbor Blvd. and Wilson St. approximately 990 ft. south and 330 ft. east of the northwest corner of sec. 15-6s-10w.

In the Stanton area of the county J. E. F. Oil Co. built a rig and is moving in equipment to drill Larson No. 1 at the northwest corner of Katella and Park Aves. in sec. 23-4s-11w.

Standard Oil Completes Good West Coyote Well

Standard Oil Co., which has resumed a drilling program on the Murphy-Coyote lease at West Coyote, completed No. 130 at 5970 ft. for a maximum flow of 607 bbls. per day clean 29.8 gravity oil and 432,000 cu. ft. of gas through a 42/64 in. bean No. 131 is making hole at 4103 ft. while grading for No. 131.



This Model 145-GKU gas-fueled Waukesha Oil Field Engine —5¼" x 6" bore and stroke, 779 cu. in. displ.—powering a Hopper Hoist is one of three such truck-mounted units used by the owner for oil well servicing in Signal Hill, Calif., area.

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Coastal District

Tide Water Spuds 2nd Los Olivos Try

Tide Water Assoc. Oil Co. is drilling its second Los Olivos area well, Chamberlin No. 1, sec. 33-8n-31w, at 1510 ft. with the intention of duplicating the 100 bbls. 11 gravity pumped production found in Davis No. 1 at 5956 ft. in the same section.

On sec. 24-8n-32w, General Pet. Corp. Wickenden No. 1 is drilling and spot coring at 2390 ft. in an effort to find an accumulation along the Gato Ridge uplift.

A. E. Bell Spuds Lompoc Deep Try

Alphonzo E. Bell Corp. spudded Lompoc No. 6 on sec. 28-8n-34w as a deep test of the Lompoc area. The well is preparing to core and test from 3000 ft. after cementing 12¾ in. surface casing at 209 ft.

Shell Finishes Big Ventura Well

Shell Oil Co., Inc. made another big completion on the Taylor lease in the Ventura Avenue field when No. 157 finished at 9500 ft. flowing 2081 bbls. of clean 31.6 gravity oil under high pressures. The company's No. 158 is drilling at 705 ft. while No. 159 is nearing producing level at 8055 ft.

In the northerly field section Lloyd Corporation's L. C. No. 9 is fishing drill pipe at 9757 ft. after getting a shut-off on 7 in. casing cemented at 9613 ft.

Seaboard Deep Test Recovers Clean Oil

Seaboard Oil Co.'s deep test of the Shiells Canyon field, Seaboard-Calumet No. 1 on sec. 10-3n-19w, is standing with 7 in. casing cemented at 3152 ft. after a formation trial from 3188 ft. to bottom at 3292 ft. recovered 1170 ft. of clean oil and noted evidence of some gas volume. It is reported that more than 100 ft. of good oil sands were cored at intervals in the section left open.

Lytle Swabbing Bardsdale Well

R. S. Lytle, operating for Carrie Estelle Doheny, Lucy Smith Batteson and the Los Nietos Co., is swabbing Elkins No. 1 on sec. 6-3n-19w at Bardsdale. Bottomed at 5681 ft. and plugged to 4919 ft. with perforated liner landed on the plug, the well swabbed dry. Finding the liner sanded up the operator gun perforated the lower section from 4885-4915 ft. and was last reported again swabbing with the well showing some disposition to flow.

Delroy Plans Test at Piru

Delroy Pet. Corp. Fisk Core Hole No. 3, sec. 22-5n-18w, is circulating to condition hole to bottom at 2805 ft. before making a formation test of sands cored in the interval 2525 to 2635 ft.

Also working in the Piru area is Continental Oil Co. Holser No. 2, now coring hard shale at 2913 ft. on sec. 14-4n-18w—Tide Water Assoc. Oil Co.'s Hidden No. 2 on sec. 5 of the township, last reported in shale at 2707 ft.—Pacific Western Oil Corp. Temescal No. 15 on section 4—drilling at 1967 ft. while No. 14 is grading and rig is up for No. 17.

Pacific Western Comps Canyon Well

Pacific Western Oil Corp. completed its Cat Canyon well, Los Alamos No. 19, at 5716 ft. with an estimated capacity of 1200 bbls. daily. Currently shut in for lack of storage the well on short tests flowed clean 15 plus gravity oil from Miocene sands entered near 4320 ft.

COASTAL COUNTIES WILDCATS

Area	Well	No.	Section	Depth	Status
	Santa Barbara County				
Cat Canyon	Bel-Air Oil Co., Williams	1	25, 9-33	6291	Stdg. squeezed
	Standard Oil Co. SBLC1		15, 9-33	7165	Drilling
Gato Ridge	General Pet. Corp. Wickeden	1	24, 8-32	2390	Drilling
Goleta	Del Mar Oil Co., Rowe	1	11, 4-28	2341	Idle
Lompoc	Alphonzo E. Bell Corp., Lompoc	6	28, 8-34	2934	Drilling
	Fickert Oil Co., Ltd., Well	1	8, 7-33		Rig
Los Olivos	Tidewater A. O. Co. Chamberlin	1	33, 8-31	1510	Drilling
	Ventura County				
Bardsdale	Hopland Oil Co., Well	1	1, 3-19	4634	Idle
	Los Nietos Co., Elkins	1	6, 3-19	5681	Testing
	San Marino Oil Co., Elkins	1	7, 3-19		Rig
Conejo	Sycamore Oil Co., Boylan	1	23, 1-20	2747	Idle
Eureka Canyon	El Rika Oil Co., Well	3	33, 4-18	500	Pumping
Ojai	Coates, Spencer D., Pirie	5	7, 4-22	1033	Idle
Piru	Continental Oil Co., Holser	2	14, 4-18	2913	Drilling
	Delroy Pet. Corp., Fisk C. H.	1	22, 5-18	2805	Circulating
	Pac. West. O. Corp. Temescal	15	4, 4-18	1967	Drilling
	T.W.A. Oil Co., Hidden	2	5, 4-18	2707	Drilling
Sespe	McCaslin, W. E., Burson	1	19, 4-19	2039	Idle
	Volunteer Pet. Co., Tar Creek	3	28, 5-19	430	Drilling
Timber Canyon	Crude Oils, Inc., West	1	19, 4-20	958	Idle
	Fletcher & Babcock O'Leary	1	29, 4-20		Location

NORTHERN COUNTIES WILDCATS

County	Well	No.	Section	Depth	Status
Butte	Pac. West'n & Getty Cana	1	11,23n-1w	3845	Drilling
	Superior Oil Co., DodgeLand	1	30,20n-1e	4868	Drilling
Contra Costa	Standard Oil Co., Jordan Unit	1	29, 3n-3e	2970	Drilling
Monterey	Loma Grande Oil Co., Corey	1	23,24s-10e	4318	Idle
	Columbia Oil Co., Vierra	1	7, 13s-2e		Rig
Sacramento	D. D. Feldman, Unit Plan	1	8, 7n-6e		Location
San Benito	Union Oil Co., Friedman	1	13, 16s-12e	6370	Fishing
San Joaquin	Standard Oil Co., Blewett Com.	3	23, 3s-6e		Rig
San Luis Obispo	W'n Gulf Oil Co., Huasna Comm	1	35, 31s-14e		Grading
	Los Nietos Co., Holmes	1	6, 32s-14e		Rigging up
Solano	Standard Oil Co. Fontana Farms	1	23, 3n-1w		Grading
	Standard Oil Co., Suisun Com.	1-2	36, 4n-2w	6007	Sidetracking
	Standard Oil Co., Suisun Com.	2-1	25,3n-1w	7300	Abandoning
	Peter Cook, Jr., Peter Cook	3	8, 4n-3e	350	Drilling

Gerard Well Now Shut-In

W. R. Gerard's Gerard-Acquistapace No. 1 on sec. 22-10n-34w in the Santa Maria Valley field is standing shut in for installation of gas control equipment. The well bottomed at 4379 ft. and completed blowing gas at an estimated 10,000,000 cu. ft. rate with only 20 bbls. of oil under open flow. Beaned back to 10/64 in. flow pressures were 700/800 lbs.

Standard Quitting Cat Canyon Test

Standard Oil Co. South Basin-Lloyd Comm. No. 1, sec. 15-9n-33w, is preparing to abandon after drilling and testing to 7250 ft. This well cored and tested at intervals all of the lower section of the hole with recovery generally consisting of mud showing only spots of oil. Top of the Monterey shale was placed at approximately 4700 ft.

On nearby section 25 Bel-Air Oil Corp. Williams No. 1 is standing squeezed after testing wet on a plug at 5650 ft. and finding the 7 in. casing bad opposite the Middle Sisquoc at 2450 ft.

Los Nietos Well Cores Pismo Shale

R. S. Lytle, Operator for Los Nietos Co., is coring Pismo Shale in Holmes No. 1. This well is a test of the Edna area of San Luis Obispo county on sec. 6-32s-13e. In the not far removed Huasna area of the county Western Gulf Oil Co. poured foundation to drill Huasna Community No. 1 on sec. 35-31s-14e.

50% Cut on Mexican Import Tariff

A fifty percent slash in the tariff duty on crude petroleum and fuel oil from Mexico from 21 to 10½ cents a barrel, highlighted the reciprocal trade agreement recently made between Mexico and the United States. There are no quota limitations in the agreement. In the Venezuela trade agreement, the tax on crude petroleum, topped crude and fuel oil derived from petroleum was reduced 50% on an aggregate quota for any calendar year, not to exceed 5% of all crude petroleum processed in refineries in the continental U. S. in the preceding calendar year. Imports in excess of this quota are taxable at the full rate.

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San Joaquin Valley

Tide Water Working East Strand Area

Tide Water Assoc. Oil Co. which recompleted its East Strand discovery well, KCL 56-8, at plugged depth of 8197 ft. for 1798 bbls. of 37.2 gravity oil with a cut of 23.6% water is again recompleting after cleaning out and replugging to 8185 ft. to shut out bottom water.

The company is rigging up to drill No. 32-17 some 3000 ft. to the southwest in sec. 17-30s-26e in search of the good Stevens sands found in the discovery well. This try is located some 1500 ft. northeast of the Continental Oil Co.'s abandoned 8574 ft. No. E-1 which was drilled in 1938. This well encountered oil sands at 8172 ft. which appeared capable of production but which on tests were wet with the operators unable to exclude the water.

Conoco Reenters Hanford District

Continental Oil Co. is preparing to move in and drill Drummond No. 2 on sec. 36-18s-22e approximately a quarter of a mile southwest of No. 1 which was abandoned in October 1942. The original well bottomed in Basement Complex at 7897 ft. after entering at 7888 ft. The Kreyenhagen was placed at 5980 ft. with Eocene sands found gray at 6080 ft.

Superior Rigs Kingsburg "Cat"

Superior Oil Co. is rigging up conventional equipment on White No. 1, sec. 29-16s-22e of Fresno county, after drilling to 577 ft. and setting 12¾ in .surface casing with portable equipment.

Republic Plugs Edison Wildcat

Republic Pet. Co. is plugging back to test showings in the 3900-3979 ft. interval on Republic-Portals No. 2, sec. 5-20s-29e in the northwest Edison area. The well bottomed in hard conglomerate and shale at 4090 ft. A formation test of the interval 3720-4032 ft. recovered a small amount of oily, greasy mud with no free water.

Reserve Quits So. Valley Try

Reserve Oil & Gas Co. suspended operations in Reserve No. 34-1 on sec. 34-11n-19w slightly northeast of the Reserve-Grapevine pool. Bottomed at 4926 ft. in gray sand the well cored fair looking oil sand in the interval 4599-4617 ft. which failed to produce, with spotted sands grading into gray sands below.

General Quits Round Mt. Try

General Pet. Corp. failed to find saturation in the Vedder with Tarabino No. 1, south of the Round Mountain field on sec,. 6-29s-29e. The try was abandoned at 3237 ft. after entering the zone at 3082 ft. to discovery only a few oil spots in the top sands.

Trico Plans Jasmine Well

Trico Oil & Gas Co. negotiated an acreage deal with Amalgamated Oil & Gas Corp. which holds considerable Jasmine area acreage, and proposes to drill a test in the southeast quarter of the southwest quarter of sec. 17-25s-28e. The location is approximately a half mile southeast of Wilshire Annex Oil Co.'s Amalgamated No. 1 which bottomed and abandoned at 1303 ft. late last summer. This well cored several bodies of oil sand streaked with gray sand which proved wet on trial. The current site is believed higher structurally which will permit finding better saturation in the Pyramid Hills sands equivalent cored in the Wilshire well.

Wilshire Completes Jacalitos Flank Well

Wilshire Annex Oil Co. completed well No. 47-26E, on the southwest flank of the Jacalitos field in sec. 26-

SAN JOAQUIN VALLEY WILDCATS

Area	Well	No.	Section	Depth	Status
Fresno County					
Coalinga	The Texas Co.	83-18	18, 21-15	4351	Abandoned
	Lytle, Robt. S., Opr., Lobre	43-24A	24, 19-15		Rig
Guijarral Hills	Standard Oil Co., Well	82-29F	29, 20-16	8773	Drilling
Nicholson	Shell-Standard, Henderson	66-22	27, 15-15	11173	Drilling
Kern County					
Bowerbank	The Texas Co., Bowerbank	1-6-c	6, 29-24		Rigging up
Comanche Point	T. W. Burnham, Chiquita	2	34, 12-19		Prep to spud
Cymric	Los Nietos Co., Sheep Springs	1	20, 29-21		Rig
	C. M. Morse, Well	1	13, 29-21		Location
Devils Den	Continental Oil Co., Mabry	3	26, 26-18	5164	Abandoned
Dyer Creek	D. D. Dunlap, Dyer Creek	1	11, 26-27	944	Idle
Edison	Republic Pet. Co., Portals	2	5, 30-29	4090	Plugging
Jasmine	Trico O. & G. Co., Trico Almgd.	1	17, 25-28		Location
Kern Front	Richfield Oil Corp. M & K Fee	1	33, 28-27	154	Drilling
McFarland	T.W.A. Oil Co., Strine	35-15	15, 26-26	6529	Abandoned
McVan	Tidewater A. O. Co. DePauli	78-19	19, 27-27	2800	Abandoned
Midway-SE.	The Texas Co., P.U.P.	2	33, 11-23	9355	Drilling
Mt. View	DiGiorgio Fruit Corp., Well	2	12, 31-29	1512	Drilling
Reserve	Reserve O. & G. Co., Well	34-1	34, 11-19	4920	Drilling
Round Mt.	Gen. Pet. Corp., Bishop	1	14, 28-28	2990	Abandoned
	Gen Pet. Corp., Tarabino	1	6, 29-29	3237	Abandoned
	Harp & Brown, Olcese	1	17, 28-29		Rig
	Iseminger Bros., Well	1	8, 30-26	331	Idle
Strand	T.W.A.O. Co., KCL	56-8	2, 28-28	8351	Completing
	T.W.A.O. Co., KCL	32-17	17, 30-26		Rigging up
Kings County					
Hanford	Continental Oil Co., Drummond	2	36, 18-22		Grading
Tulare Lake	Shell Oil Co., Inc. T.S.G.	21-28	28, 22-20	4406	Drilling
Madera County					
Mendota	The Texas Co., Gill	38-16	16, 13-16	7525	Drilling
San Luis Obispo County					
Midway, NW.	C.C.M.O. Co., Thomas	1	1, 31-21	6858	Drilling
	C.C.M.O. Co., Well	25-1	1, 32-22	5524	Abandoned
Tulare County					
Kingsbury	Superior Oil Co., White	1	29, 16-22	577	Drilling

21s-15e, at 3887 ft. pumping initially water with a trace of oil and cleaned up in two days to a return of 75 bbls. daily 40 gravity oil cutting only 0.1% water.

SE Midway Well Deep

The Texas Co. Pioneer Unit Plan No. 2, a wildcat located southeast of the field limits on sec. 33-11n-23w, is drilling at 9415 ft. after coring at intervals and running electric log below 9400 ft. No showings have yet been reported on this well.

Shell Starts Tulare "Cat"

Shell Oil Co., Inc. is under way with T. S. G. No. 21-28, a wildcat intended to test to depth under the Tulare Lake bed. Drilled from an over the water location on sec. 28-22s-20e, the well is making hole at 4406 ft. as the first deep try in the area lying some 8 miles northeast of Kettleman Hills and 5 miles northeast of shallow gas sands at Dudley Ridge.

Ring Oil Working Mount Poso Lease

Ring Oil Co. is developing acreage in the Mount Poso field with several holes immediately scheduled. Latest completed was Bowles No. 14 on sec. 29-26s-28e. This well bottomed in Vedder sands at 1730 ft. to complete pumping 105 bbls. of clean 14.8 gravity oil. The company's No. 15 was last reported preparing to complete at 1750 ft. after cementing casing at the top of Vedder sands at 1743 ft. while site is being prepared for No. 16.

Amerada Completes Riverdale Driller

Amerada Pet. Corp., which is developing its self discovered Riverdale field in Fresno county, completed Lawton No. F-33-26, sec. 26-17s-19e, at plugged depth of 6850 ft. flowing 136 bbls. daily of 63.1 gravity condensate and 4,524,000 cu. ft. of gas through a 16/64 in. bean. Tubing pressure is 2225 lbs. while the casing dial shows 2300 lbs.

Next to finish will be Leal No. F-21-26 in the same section which is flowing by heads no estimate at press time. Amerada is operating six other projects in the field.

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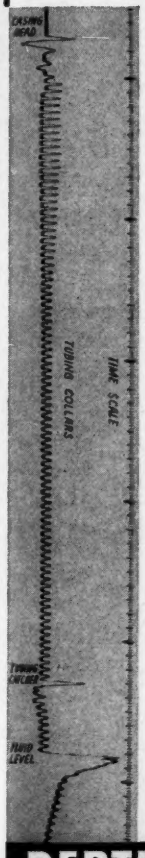

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